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EARIST RESEARCH JOURNAL

"Re-energizing Innovation Through Industry 4.0 Platform"

The EARIST Research Journal seeks to further the discussion, advancement, and dissemination of research, planning, development and production concerns and knowledge along professional, scientific, technological, technical and vocational instruction and training in trades, business, arts, sciences and technology.

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FOREWORD

The Eulogio "Amang" Rodriguez Institute of Science and Technology takes pride in publishing Volume XIX, No. 26, July – December 2019 of the EARIST Research Journal as it contributes to the attainment of EARIST's Mission, Vision, Goals, and Objectives through scholarly publications.

This volume is the output of researches conducted by EARIST faculty during the Academic Year 2019. This volume highlighted Twelve (12) distinct researches in different fields, but most noteworthy, each individual research achievement.

The topics vary as shown in every page, but each is full of diverse stories confirming happenings in every college of the Institute. The office of research hopes to mirror the activities of our educators in assuming their task as researchers.

There are more challenges left in the various fields waiting for further scrutiny. We continue the never ending cycle of the quest for new knowledge and further understanding of the issues at hand. The work remains unsolved. But unless we produce our own solutions to existing problems, the challenges will never be met.

The research work undertaken by faculty members and staff are included with the hope that these will contribute to the advancement of research activities of the institute and will serve as medium in the dissemination of research outputs to the community.

Engr. Rogelio T. Mamaradlo
Director, Research Services

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EARIST WEATHER STATION

Daisy Mae R. Bongtiwon

INTRODUCTION

Weather describes the particular condition of the atmosphere. Climate refers to the behavior of the atmosphere to a place over a long period of time. **Everybody in this world is concerned with weather and climate.** The Weather forecasting is much needed tool for our society in today's lifestyle. It helps us make decisions on our daily activities. For instance, it helps farmer make decision regarding their crops, and it helps people plan their daily traffic routes. Furthermore, it is necessary for a country that depends on its agricultural production to have an accurate weather forecast so that it can manage its agricultural production and investments better.

Atmospheric conditions include the temperature, precipitation, humidity, wind and pressure. With all the advance tools we have in the current age, it is quite simple for one to make their own observations of the local weather and doing so is so affordable that an individual can have their own inexpensive weather station. **Tools are needed to work on weather forecasting.** A Weather Station is a facility with instruments and equipment for measuring atmospheric conditions to provide information for the weather forecasts and to study the weather and climate.

Highly advanced technology is being used to determine accurate condition of the atmosphere which results to our daily weather. The measurements taken in a weather station include temperature, atmospheric pressure, humidity, wind direction, and precipitation amounts. Manual observations are taken at least once daily, while automated measurements are taken at least once an hour. **EARIST Weather Station (EWS) is an automated version of the traditional weather station.** It has sensors to measure atmospheric temperature and humidity. It has an anemometer for measuring wind speed and wind vane sensor for direction. It also include a barometer for measuring pressure, and rain gauge for rainfall.

WIND SPEED

Wind speed or wind flow velocity is a fundamental atmospheric quantity. Wind speed is caused by air moving from high pressure to low pressure, usually change in temperature. Wind speed is now commonly measured by anemometer but can also be classified by using the older beau fort scale which is based on people's observation of specifically defined wind effects. The wind speed is measured using a cup or propeller anemometer, cup anemometer is an instrument with three cups or propellers in a vertical axis. The force of the wind causes the cup to spin. The spinning rate is proportional to the wind speed.

WIND DIRECTION

Wind direction is reported by the direction from which it originates. For example, a northerly wind blows from the south. It is usually reported in cardinal directions or in azimuth degrees.

HUMIDITY

Humidity is the amount of vapor present in the air. Water vapor is the gaseous state of water and is invisible to the human eye. Humidity indicates the likelihood of precipitation, dew, or fog. Higher humidity reduces the effectiveness of sweating in cooling the body by reducing the rate of evaporation of moisture from the skin.

TEMPERATURE

Temperature is a physical quality expressing hot and cold. Temperature is measured with a thermometer, historically calibrated in various temperature scales and units of measurement.

ATMOSPHERIC PRESSURE

Barometer is a scientific instrument used in meteorology to measure barometric pressure.

PRECIPITATION

Rain gauge is an instrument used by meteorologists and hydrologists to gather and measure the amount of liquid precipitation over a set period of time.

Conceptual Framework

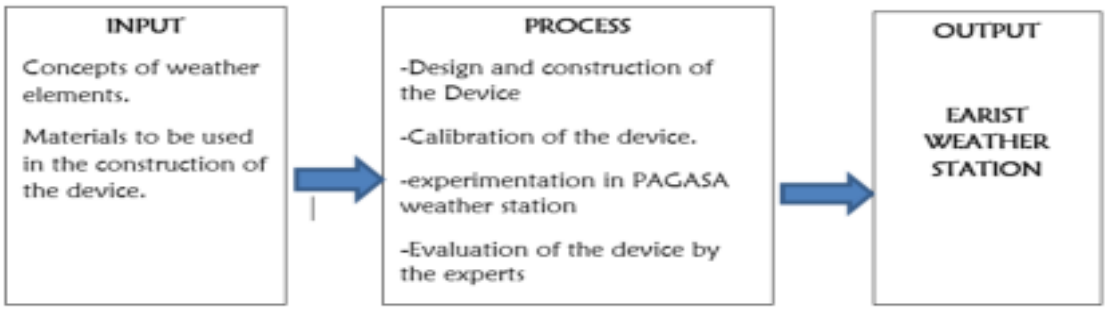


Figure 1: Conceptual Framework of EWS

STATEMENT OF THE PROBLEM

This study aimed to construct an (EWS) EARIST Weather Station that can be used to understand weather elements such as wind speed, wind direction, humidity, precipitation, temperature and pressure which may also provide additional pertinent information about weather conditions in remote areas.

Specifically, it sought to answer the following questions:

1. What is the result of the calibration of the EWS instrument when compared and calibrated by PAGASA?

2. Is there a significant difference between the measurements recorded by PAGASA and EWS after it has been calibrated and implemented the correction in the computer system?

3. How do experts evaluate the device in terms of durability and marketability?

HYPOTHESIS

There is no significant difference between measurements recorded by PAGASA weather instrument and EWS.

SIGNIFICANCE OF THE STUDY

The significance of this study is to help in weather forecasting. It can also be used to explore and search for alternative weather instruments to measure Rain Fall, Wind Speed, Wind Direction, atmospheric pressure, temperature and Humidity. It can also be used as an alternative instructional device in measuring weather elements in a science classroom. Lastly, this study can improve and innovate the technical skills of BSAP students in weather forecasting and be employed in PAGASA after graduation.

REVIEW OF RELATED LITERATURE

AUTOMATIC WEATHER STATION was invented by Diamond Harry, JR Wilbur S Hinman. It is made and used by and for the Government of the United States for governmental purposes. This invention relates to automatic weather stations and aims generally to improve the same. In an automatic weather station, measurements may be required of barometric pressure, ambient temperature and relative humidity, wind velocity and direction, rainfall, visibility, ceiling height, and probably other factors.

DIGITAL WEATHER STATION was invented by John S. Baer. A totally digitalized weather station provides a digital display with selection elements for selecting a particular transducer and indication elements for indicating which parameter is being sensed at the time. Elements are provided to select from memory maximum and minimum readings of various parameters.

WIRELESS WEATHER STATION was invented by John S. Baer, Stephen K. Bohrer and Michael A. Vietti. A wireless weather station for measuring a number of weather parameters over an extended time at a data collection location. The weather data can be transmitted to a remote location using substantially less total power than would be necessary to provide real time continuous transmission, yet provide the appearance of real time continuous transmission.

METHODOLOGY

The design of the study is descriptive and experimental since the device was constructed and calibrated in an appropriate agency and the functionality and marketability of the device were evaluated by physics teachers, BSAP students and weather experts from PAGASA.

The project was calibrated at PAGASA in Science Garden, Agham Road, Quezon City. The construction of the device was done at the Physics laboratory, 4th Floor, Nudas Hall, EARIST, Manila.

DATA GATHERING PROCEDURES

The researcher used the concept of wind speed, wind direction, temperature, humidity, barometric pressure, and rain gauge in constructing the device. Different sensors were used to measure wind speed, wind direction, temperature, humidity, barometric pressure and rain gauge.

Schematic Diagrams

Schematic diagrams were drawn to guide the researchers in the construction of the devices for measuring wind speed, wind direction, temperature, humidity, rain gauge and barometric pressure.

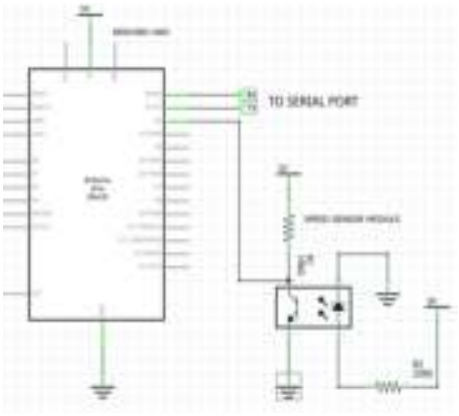


Figure 2. Schematic Diagram of the Wind Speed

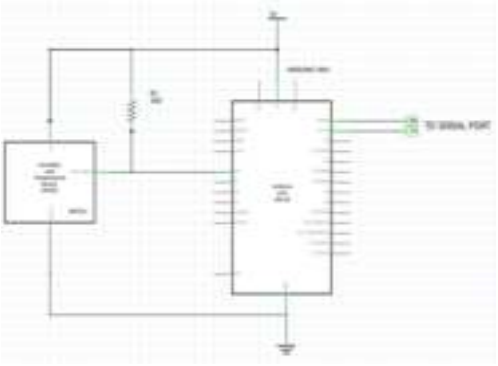


Figure 3. Schematic Diagrams of Temperature and Relative Humidity.

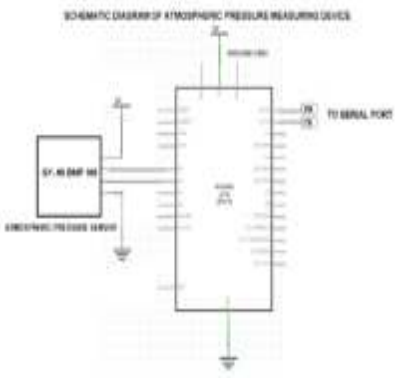


Figure 4. Schematic Diagram of Atmospheric Pressure

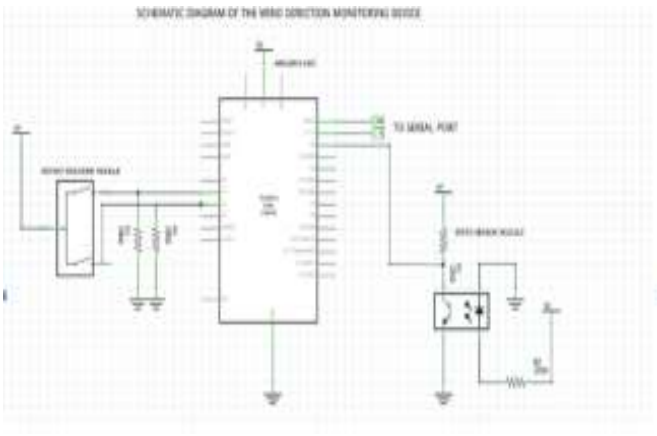


Figure 5. Schematic Diagram of Wind Direction

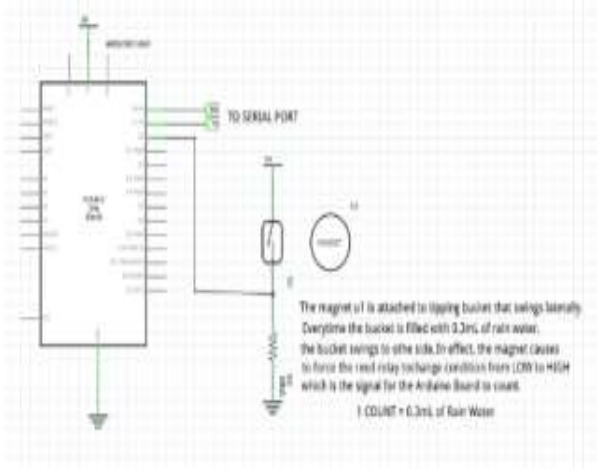


Figure 6. Schematic Diagram of Rain Gauge

STATISTICAL TREATMENT OF DATA

To determine the significant difference between the measurements recorded by PAGASA weather instruments and the EWS, t-test for paired samples was used.

DATA & RESULTS

Construction of EARIST Weather Station

The (EWS) EARIST Weather Station is an automated version of the traditional weather station. It has typical weather-proof enclosure containing the data logger and sensor. The system may report in several different ways. The (EWS) EARIST Weather Station has a temperature and humidity sensor, anemometer, barometer and rain gauge.

MATERIALS USED

Arduino microcontroller

BMP180 (Barometric Pressure Sensor)

DHT11 Sensor (Temperature and Humidity)

Pipe

Type B USB

Rain Gauge

Male/Female Wire

Pipe Elbow Shape

USB Hub

Pipe T Shape

Type B USB Mini

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

The EARIST Weather Station is light and portable, it can be easily transported even in higher altitude such as mountains and buildings. It has different sensors for wind speed, wind direction, temperature, humidity, pressure and rain gauge.

EARIST WEATHER STATION

This image shows the design of the device and its part. In wind speed as you can see there's a cup anemometer, inside the design of cup anemometer is the IR speed sensor and it has a rotator, inside of the elbow pipe is the Arduino micro controller for wind speed. In wind direction there's a round Tupperware inside of it there's an opto interrupter sensor, it is a tiny trip line, when something solid passes between the emitter and the receiver it is detectable as a change in the digital output, inside of the elbow pipe is the arduino micro controller for wind direction. As you can see pipe(PVC) and shoe case is the body of the device. Inside the shoe case is the arduino micro controller for barometric pressure and temperature and humidity. On the side of the shoe case there a separated elbow pipe inside of it is the barometric pressure sensor, temperature and humidity sensor

A. Result of Calibration of the Device at PAGASA

Table 1 – Result of Calibration (Humidity)

Reference Humidity, %RH	Observed Humidity, %RH	Correction, %RH	Uncertainty, %RH
90.70	79.00	11.70	0.46
80.45	61.00	19.45	0.61
65.53	44.00	21.53	0.34
50.58	12.00	38.58	0.32
40.54	11.00	29.54	0.40

First column presented the reference humidity in %RH provided by PAGASA which were used for the calibration of the device. The second column presented the observed pressure in %RH the constructed device. The third column presented the correction difference upon the measured and the fourth column presented the uncertainty, %RH. The measurements were interpolated between different readings if necessary. The required uncertainty is 3.0%RH.

Environmental condition upon the calibration for the humidity sensor is follow below:
Temperature: (28.4±0.6)ºC
Relative Humidity: (47.9±5.8)%RH
Pressure: (1003.6±1.1)hPa

Uncertainty of Measurement:

The uncertainty stated has been calculated based on a standard uncertainty multiplied by a coverage factor k=2 with confidence level of 95%

Table 2 – Result of Calibration (Pressure)

Reference pressure, atm	Observed pressure, atm	Correction, atm	Uncertainty, atm (±)
1.0067	1.0066	+0.0001	0.00108
0.9968	0.9970	-0.0002	0.00180
0.9869	0.9867	+0.0002	0.00218
0.9672	0.9673	-0.0001	0.00103
0.9475	0.9476	-0.0002	0.00105

First column presented the reference pressure in atm provided by PAGASA which were used for the calibration of the device. The second column presented the observed pressure in atm the constructed device. The third column presented the correction difference upon the measured and the fourth column presented the uncertainty, atm (±). The measurements were interpolated between different readings if necessary. The required uncertainty is 0.00014 atm.

Environmental condition upon the calibration for the humidity sensor is follow below:
Reference Temperature: (29.0±0.1)ºC
Relative Humidity: (50.8±2)%RH
Pressure: (0.9865±0.1)atm

Uncertainty of Measurement:

The uncertainty stated has been calculated based on a standard uncertainty multiplied by a coverage factor k=2 with confidence level of 95%.

Table 3 – Result of Calibration (Temperature)

Reference Temperature (ºC)	Observed Temperature (ºC)	Correction (ºC)	Uncertainty (±ºC)
30.3	27.0	+3.3	0.13
20.2	17.0	+3.2	0.11
10.0	8.0	+2.0	0.11

First column presented the reference pressure in ºC provided by PAGASA which were used for the calibration of the device. The second column presented the observed pressure in ºC the constructed device. The third column presented the correction difference upon the measured and the fourth column presented the uncertainty, ºC (±). The measurements were interpolated between different readings if necessary. The required uncertainty is 0.2 ºC.

Environmental condition upon the calibration for the humidity sensor is follow below:
Reference Temperature: (28.8±0.1)ºC
Relative Humidity: (48.1±6)%RH
Pressure: (1002.4±3)hPa

Uncertainty of Measurement:

The uncertainty stated has been calculated based on a standard uncertainty multiplied by a coverage factor k=2 with confidence level of 95%.

Table 4 – Result of Calibration (Rain)

Actual Rate (mm/hr)	Percent Error (%)
28.37	**+2.38**
93.13	**+2.38**
200.00	**+0.91**

First column presented the actual rate in millimeter per hour the constructed device. The second column presented the percentage error of the constructed device. The area is 50.0 cm and height or rainfall per tip of the constructed device is 0.3 mm.

The required percentage error: within +/5%
Most convenient area of orifice for a rain gauge is 200 cm^2 to 500cm^2
Reference used: 100 ml Graduated Cylinder
Brand Name: PYREX
Control No. 0615CAL06884
Premier Physics METROLOGIE
Using Rain Guage Test Equipment, Theodore Friedrichs & co.

B. Significant difference between the measurements recorded by EWS and PAGASA Weather Center

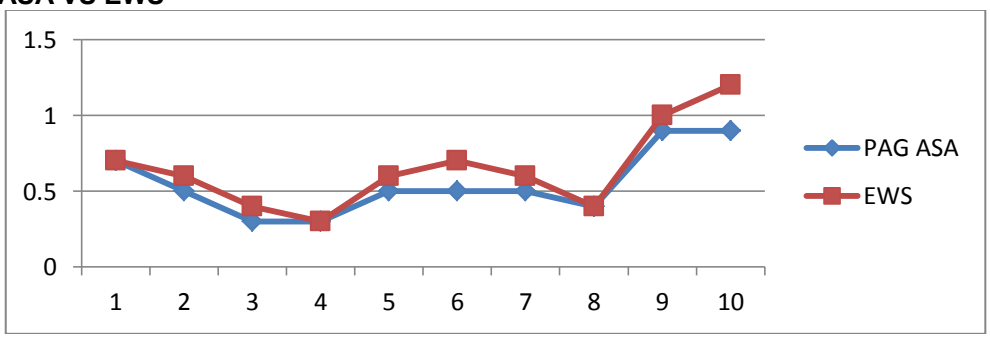
- **Wind Speed**

Table 5
No. 1 Electric Fan

Trial	PAGASA (m/s) (A)	EWS (m/s) (B)	Differences (A-B)
1	0.7	0.7	0
2	0.5	0.6	0.1
3	0.3	0.4	0.1
4	0.3	0.3	0
5	0.5	0.6	0.1
6	0.5	0.7	0.2
7	0.5	0.6	0.1
8	0.4	0.4	0
9	0.9	1	0.1
10	0.9	1.2	0.3
Mean Difference		0.1	
Standard deviation		**0.03**	
t_o Value		**3.35**	
Degree of freedom		**9**	
t_o Critical value () Two tailed(1%)		**2.263**	

Analysis of Data:
Based on the result of data gathered during the experimentation, the t_0 Critical Value is less than the t_0 Value, therefore, the instrument of PAGASA and the constructed device in terms of No. 1 electric fan in Wind Speed has no significant difference.

PAG ASA VS EWS



- **Humidity**

Table 6
Humidity Measurements

Trials	PAGASA Humidity, %RH (A)	DEVICE Humidity, %RH (B)	Difference (B-A)
1	51.47	42.4	-9.07
2	51.05	42.4	-8.65
3	51.53	42.4	-9.13
4	51.41	42.4	-9.01
5	52.06	42.4	-9.66
6	52.57	42.4	-10.17
7	52.72	42.4	-10.33
8	52.36	42.4	-9.96
9	52.08	42.4	-9.68
10	51.71	42.4	-9.31
Mean Difference		-9.50	
Standard deviation		**0.17**	
t_o Value		**-54.71**	
Degree of freedom		**9**	
t_o Critical value () Two tailed(1%)		**2.263**	

Analysis of Data:
Based on the result of data gathered during the experimentation, the t_0 Critical Value is greater than the t_0 Value, therefore, the instrument of PAGASA and the constructed device in terms of humidity has significant difference.

- **Pressure**

Table 7
Pressure Measurements

Trials	PAGASA Pressure, atm (A)	EWS Pressure, atm (B)	Difference (B-A)
1	1005.18	1005	-0.18
2	1005.19	1005	-0.19
3	1005.2	1005	-0.2
4	1005.2	1005	-0.2
5	1005.19	1005	-0.19
6	1005.19	1005	-0.19
7	1005.2	1005	-0.2
8	1005.2	1005	-0.2
9	1005.21	1005	-0.21
10	1005.22	1005	-0.22
Mean Difference		-0.20	
Standard deviation		**0**	
t_o Value		**-55.55**	
Degree of freedom		**9**	
t_o Critical value () Two tailed(1%)		**2.263**	

Analysis of Data:
Based on the result of data gathered during the experimentation, the t_0 Critical Value is greater than the t_0 Value, therefore, the instrument of PAGASA and the constructed device in terms of pressure has significant difference.

- **Atmospheric Temperature**

Table 8
Temperature Measurements

Trials	PAGASA temperature, °C (A)	DEVICE temperature, °C (B)	Difference (B-A)
1	29.60	30.5	-0.9
2	29.61	30.5	0.89
3	29.61	30.5	0.89
4	29.63	30.5	0.87
5	29.64	30.5	0.86
6	29.63	30.5	0.87
7	29.65	30.5	0.85
8	29.67	30.5	0.83
9	29.68	29.42	-0.26
10	29.69	29.42	-0.27
Mean Difference		0.64	
Standard deviation		**0.15**	
t_o Value		**4.24**	
Degree of freedom		**9**	
t_o Critical value () Two tailed(1%)		**2.263**	

Analysis of Data:
Based on the result of data gathered during the experimentation, the t_0 Critical Value is less than the t_0 Value, therefore, the instrument of PAGASA and the constructed device in terms of pressure has no significant difference.

- **Wind Direction**

Table 9
Wind Direction Measurements

Trial	PAG ASA	DEVICE
1	South	South
2	Southeast	Southeast
3	Southeast	Southeast
4	Southeast	Southeast
5	South	South
6	South	South
7	South	South
8	South	South
9	South	South
10	South	South

Analysis of Data:
Based on the result of data gathered during the experimentation , the measurements of direction by the instrument in PAGASA and EWS have the same direction.

Table 10
Results of Experimentation

Element	Computed t- value	Interpretation
Wind Speed	3.35	Not Significant
Humidity	54.71	Significant
Pressure	55.55	Significant
Temperature	2.24	Not Significant
Wind Direction	Trial 1	Not Significant

The data shows that the device is accurate in terms of wind speed, temperature and wind direction. However, more enhancement of the device's humidity and pressure sensors is suggested to improve its humidity and pressure measuring power.

C. Experts Evaluation of EARIST WEATHER STATION

- **Marketability**

Table 11 shows the computed weighted mean, rank, and verbal interpretation according to respondents in terms of marketability.

Table 11
Marketability of EARIST Weather Station

Criteria	Weighted Mean	Rank	Verbal Interpretation
1. The device is economical to use	3.6	2	Agree
2. The device can satisfy the customers' needs for weather updates	3.3	3	Slightly Agree
3. The device is user friendly	3.9	1	Agree
Grand Mean	**3.6**		**Agree**

According to the result of the survey, "The device is user friendly" and is economical to use". However, the overall mean is 3.6 which mean the respondents agreed with the marketability of the device.

- **Durability**

Table 12 shows the computed weighted mean, rank, and verbal interpretation according to respondents in terms of marketability.

Table 12
Durability of the EARIST Weather Station

Criteria	Weighted Mean	Rank	Verbal Interpretation
1. The device is well-constructed.	4.0	1	Agree
2. The device is made of durable materials	3.7	3	Agree
3. The device is unbreakable and can withstand with different weather conditions.	3.9	2	Agree
4. The device is sealed and fully protected from insects and other harmful animals.	3.5	4	Agree
Grand Mean	**3.7**		**Agree**

According to the result of the survey, "The device is well constructed. However, the overall mean is 3.7 which mean the respondents agreed with the durability of the device.

SUMMARY

The study aimed to design and construct an EARIST Weather Station. Upon completion of the device it was evaluated by the experts. Experimentation was done to verify the efficiency, and accuracy of the device in measuring wind speed, wind direction, temperature, humidity, rain gauge and barometric pressure.

FINDINGS OF THE STUDY

The salient findings of the study are the following:

1. The materials used in constructing an EARIST Weather Station are really applicable and affordable.

2. The design of EARIST Weather Station as evaluated by the experts was good and agreed by most of them.

3. The device can measure wind speed, wind direction, temperature, humidity, rain gauge and barometric pressure efficiently as evaluated by the expert.

Element	Computed t- value	Interpretation
Wind Speed	**3.35**	**Not Significant**
Humidity	**54.71**	**Significant**
Pressure	**55.55**	**Significant**
Temperature	**2.24**	**Not Significant**
Wind Direction	**Trial 1**	**Not Significant**

CONCLUSIONS

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

1. The EARIST Weather Station has a good design and has been calibrated at PAGASA, Science Garden, Quezon City.

2. The EARIST Weather Station can measure wind speed efficiently, temperature and wind direction.

3. The device can record precise and sometimes accurate measurements.

4. The device is rated good (agree) by the respondents.

RECOMMENDATIONS

Based on the conclusion presented the following recommendations are suggested:

1. The calibration of the device must be done again in different weather conditions.

2. The experimentation should be done in remote areas so that the device can be tested even in different locations and environment.

3. Further evaluation of the device should be done in order to improve the marketability and durability of the device and also to improve the functionality of the computer system.

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https://www.google.com/patents/CN204089213U?cl=en&dq=rotation+speed+adjustable+wind+power+generator&hl=en&sa=X&ved=0ahUKEwifjaGcve_WAhXHLpQKHZD8BSIQ6AEILDAB

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KOTAKE NOBUKI, KAMEYAMA SHUMPEI, TAMAGAWA YASUHISA
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NAOKI MATAYOSHI (2009)
https://www.google.com/patents/US9728092?dq=wind+speed&hl=en&sa=X&ved=0ahUKEwiu67Drvu_WAhUOhrwKHXDMDeMQ6AEILDAB

Humidity
https://www.google.com/search?q=humidity&oq=humidity&aqs=chrome..69i57j0l3.2343j0j4&cli e nt=ms-android-huawei&sourceid=chrome-mobile&ie=UTF-8

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https://www.google.com/search?client=ms-android-huawei&ei=6jPTW7TTPKm0jwS5-ojAAg&ins =false&q=temperature&oq=Tempera&gs_l=mobile-gws-wiz-serp.1.0.0i131i67i70i256j0i67j0i131i 67j0i67j0i20i264.489199.495193..496375...1.0..0.633.3047.3-2j4j1.....0....1.....5..0i71j35i39j46i 39.T_iqkAzoKfE

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https://www.google.com/search?client=ms-android-huawei&ei=LzbTW9mZEKKvgges1aGwBg&i ns=false&q=wind+speed&oq=Wind+spped&gs_l=mobile-gws-wiz-serp.1.0.0i10l5.35732.38523.. 42420...2.0..1.2909.10838.9-4.....0....1.....5..0j0i71j35i39j46i39j0i20i264j0i67.xoIX5y4Glm8

Wind speed
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REVIEW ON COMBINED MIMETIC AND SOCRATIC TEACHING METHODS IN ARCHITECTURAL EDUCATION AS AN EFFECTIVE LEARNING STRATEGIES FOR ARCHITECTURE STUDENTS IN EARIST

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Ar. Fernando C. Pamintuan

INTRODUCTION

Architectural education is the manifestation of the ability to conceptualize, coordinate and execute the idea of building, rooted in the tradition of humanism. As per CMO No.61 Series of 2017, architectural education is training and development of the students' proficiency on the theories, practices and techniques of the architectural profession in accordance with the scope of the practice of architecture as provided for in Republic Act No. 9266, and its implementing rules and regulations.

To equip students to these theories, practices and techniques, there are architectural institutions which were duly accredited by the Commission on Higher Education that offer programs in architectural education. In the last few decades, these institutions have made important efforts to improve the quality of architectural education. Concepts such as innovative ideas, emotional intelligence and creativity have started to be seen as very important in recent years. (Yürekli and Yürekli, 2004; Casakin and Kreitler, 2009).

Creativity and design courses are the backbone of architectural education. The concept of creativity is very important for the architectural profession, and architecture is also sometimes used instead of creativity as meaning (Danaci, 2014). There are following variables inherent in creativity; cognitive (intelligence-information; technical skills-specific capabilities), personal (political and religious factors-cultural factors-socio-economic factors) and environmental (intrinsic motivation-belief-personal creativity feature) (Meng, 2007; Önal, 2011). If student doesn't learn to understand the cognitive variables of creativity such as knowledge and technical drawing skill, he/she cannot be successful enough at design, due to a lack of ability of the structural knowledge and presentation even if he/she has the innate ability of creativity. Architectural education should give students cognitive development, and the ability to use it in the creative process (Danaci, 2014).

The conventional lecture method is the most widely used instructional strategy for higher education as in the colleges and universities. With the technology development and emergence of new teaching methodologies and strategies in the current day, lectures still remain an important communication to students like in class room lecture, guest lecture, power point presentation, day long seminars, etc.

In combination with active learning and teaching strategies, the conventional lecture is an effective method of communication. The advantages of the lecture approach is that it provides a way to communicate and prepares student to new information or idea to many listeners--mass instruction; but the disadvantages being minimal feedback from students, assuming a minimal level of student understanding and often disengages the students due to distractions. With this learning process interruption, the information is being forgotten before the next lecture hour (Viswanathan, Champa, 2014).

Thus, faculty prefers fewer lectures; and to make the learning and teaching environments more interactive, integration of technology into the learning experience, dialogues and collaborative learning strategies is used.

METHODOLOGY

Generally, it starts with a lecture of general principles and eventually goes into detail with its applications. Solving an actual or live example and giving solutions would be a preferable alternative in the teaching and learning process, just like instruction beginning with observations, book reviews, literature studies, site visits or on site instruction, case studies, etc.

In the active teaching and learning method, interaction between teachers and students, discussions among students themselves, as well as between students and the subject materials were created. Two (2) methods are presented and combined to deal in accordance to the subject matter being taught by the faculty, these methods known as the Mimetic Method (for pure lecture subjects) and the Socratic Method (for subjects with lecture and studio/laboratory). Combining two methods, Mimetic-Socratic Method, may be used as faculty teaching strategy.

Mimetic Method

Mimetic teaching engages the learner and guides him to learn from types (paradigms or models) until he can express and apply the new idea (Holleran, 2012). Mimetic teaching is neither a series of immovable steps nor a collection of laws; instead it follows the very flexible and adaptable natural stages students move through when they come to understand and master ideas and skills.

To teach mimetically, the teacher must first embrace the goal of the lesson: that the student will be able to apply the idea being taught.

The mimetic sequence moves through five (5) steps:

- **Preparation**. The teacher prepares the student to receive the concept. It starts with what the student knows and leads him to a gap he needs to cross.
- **Presentation**. The teacher presents types. If it is architectural history, show random samples or illustrations of architecture with its distinct architectural styles. If Building Materials, provide clips with materials being used in the building, whether interior or exterior.
- **Comparison**. The teacher leads the student to compare the types until he discovers the pattern of truth. This is important and presents perhaps the biggest challenge to the old way of teaching. This is the light-bulb moment.
- **Expression**. The student expresses the concept in his own words. This stage is very short. The teacher simply asks the student to describe or explain the idea. This is how the teacher knows the lights went on. If he can express it, he owns it. If the student is unable to explain or describe the idea being taught, revert back to the third stage and compare the types more closely.
- **Application**. The student practices or applies the concept. Give him one to do on his own.

Socratic Method

The Socratic Method originates with Socrates, Athenian philosopher who lived around 470 B.C. Socrates was born the son of a sculptor and was trained as a sculptor himself.

However, he realized that his true calling was actually the sculpting of young minds (Knezic, et al, 2010). An interesting definition of the Socratic method gives Nicholas Schiller (Schiller,2008), the method is described as follows: "…Accordingly he asked questions, letting the other man do most of the talking, but keeping the course of the conversation under his control, and so would expose the inadequacy of the proposed definition of courage. The other would fall back on a fresh or modified definition, and so the process would go on, with or without final success" (Schiller, 2008).

The main characteristic of the Socratic method is that it is not "teaching" in the conventional sense of the word. Teacher is an observer, a helper, guide but not the purveyor of knowledge. Lectures with "undeniable" facts and truths and rote memorization or, in other words, "guiding the students" is replaced with shared dialogues between students and teachers where both are responsible for pushing the dialogue forward through questioning.

The Socratic Method has five (5) stages:

- **Wonder**. Posing questions such as: what is the design concept;
- **Hypothesis.** An answer to the wonder, one gives his opinion or claim about the question which becomes a hypothesis of the dialogue;
- **Elenchus, refutation and cross-examination**. The core of Socratic practice; the hypothesis is called into question and the counterexample is given to prove or disapprove the hypothesis;
- **Acceptance/rejection of the hypothesis**. Participants accept or reject the counterexample;
- **Action.** Acting on the findings of the inquiry (Boghossian, 2012).

Using Socratic Method in teaching, giving students questions and not answers, we simply force students' reasoning and the logical relationships of their existing knowledge and experience. Since the critical thinking skills cannot be directly taught, by the Socratic method it can be engaged and cultivated and students are fostered to improve this skill. (Lam, 2011)

These Mimetic-Socratic methods were learner-centred. They impose more responsibility on students for self-learning than the conventional lecture based approach. The students do more of research projects and their findings through the research are included into the existing information. They are involved in dialogues, where they were given questions and not answers, teacher simply forces students' reasoning and the logical relationships of their existing knowledge and experience. With these, students construct their own version of reality rather than just absorbing the versions presented by the faculty.

RESULTS AND DISCUSSION

In Boyer Report (2013), the education of students about the climate for learning and education of students about scientific, social, aesthetics, political and environmental are:

"Each school of architecture should actively seek to establish a supportive climate for learning—where faculty, administrators, and students understand and share common learning goals in a school environment that is open, just, communicative, and caring" (p. 27).

"The education of students about the scientific, social, aesthetic, political, and environmental foundations of architecture, should not be about 'teaching' disembodied skills and facts. The standards should stress active inquiry and learning by doing, rather than the accumulation of facts from texts, required lectures, or design problems handed ready-made to students. Further, students should be partners in extending the knowledge base of the profession through reflective practice. Learning to define problems, asking the right questions, and weighing alternative approaches must be at the heart of architecture study." (p. 72)

There's a need to improve the teaching method being employed in the teachings of Architectural Design, Architectural History, Architectural Theories, Building Laws, Buildings Utilities, Building Technologies, and Architectural Planning due to noticeable droppings and failings in the performances of students in the course, as like 10-30% failing the architectural subjects every semester, affecting the college's retention rate and fearing themselves to take the Architect's Licensure Examinations. (EARIST-Architecture, 2018)

This combined method may be beneficial to students especially in group projects and/or group discussions which can help them improve their skills that are increasingly important in the professional world. Properly structured group projects can reinforce skills that would enable the students to breakdown the tasks into parts and steps; time management; refining the topic into simpler versions; development of communication skills; face more complex problems; share every individual perspective; relate knowledge and skills; risk management; develop new methods/approaches; develop one's own perspectives; oneself to get update their knowledge. These promote meaningful teamwork and deep collaboration.

This combined method may also be beneficial to faculty where they can often assign complex, authentic problems to groups of students rather than individuals. Group work introduces an unpredictable nature in teaching, and would solve problems in more diversified and interesting ways. In addition, group assignments also would be appropriate so as to get more brainstorming discussion and followed by diversified results in it.

CONCLUSION AND RECOMMENDATIONS

Architecture education is redefined as architecture in action, following a methodology that bridge across disciplinary and academic boundaries and combines scientific dogmatism with innovation and intuition. Thus, the value of integrative practice-based-learning relies upon student's generation rather than gaining knowledge, substituting disciplinary knowledge.

The integrative and investigative learning-by-doing approaches could undertake as an experimental paradigm in which students and professors collaborate to push the boundaries of the discipline in terms of its analytical, creative and critical thinking, allowing the pedagogical context to become central in the development of new insights.

Skills are learnt through frequent practices, therefore the students should be motivated to perform more practices as much as possible and never neglect the feedbacks. Educators should aim at enhancing students' communication and collaborative skills in order to help them perform better in a widening array of consultants and inter-disciplinary teams in their future professional practice.

The educators responsibility is to make the students think innovatively, have a fresh view on the built environment, be able to design better world that possibly we cannot even imagine. Educators should first acquaint themselves with best practices such as providing extensive support and guidance when students are first introduced to the method and then further down withdraw the support as the students improve and get more experience and are

confident of the usage of the new methods. The goal should be to facilitate the students to become self- learners rather than them to depend on faculty as key source of information.

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ON HOGBEN CENTRAL POLYGONAL NUMBERS: PROPERTIES AND APPLICATIONS

Yvonne C. Orozco

INTRODUCTION

Integers are the main concern of Number Theory. Integers have become an integral part of the human being in their everyday life, especially when they take into account the modern computer. These words have been recorded on a computer using a code of ones and zeros. It is an interesting story how these digits have come to dominate our world.

A sequence whose terms are integers can be analyzed by a variety of techniques, including the application of a data compression algorithm, computation of the discrete Fourier transform, or searching for a linear recurrence equation connecting the terms or a generating function producing them. There are also a large number of transformations which relate integer sequences to one another, including the Euler transform, exponential transform, Möbius transform, and others. These sequences arise in many area of mathematics, and comprise an important subject area.

One of the interesting integer sequences is called Hogben's Number Sequence, or sometimes it is called central polygonal numbers. It has a very simple formula, and a lot of nifty properties, but one cannot been able to find any adequate explanation of why it is called "central polygonal numbers". For years, many have wondered why Sloane and Plouffe thought it is so well-known as to not require better explanation in the books. Eventually on-line database provided plenty of formulas and descriptions but still nothing particularly "central polygonal".

Hogben central polygonal number is related to some concepts in mathematics like cyclotomic polynomials and knot theory. Porter(2015) defined cyclotomic polynomials as the unique irreducible polynomial with integer coefficients that is a divisor of and is not a divisor of for any. Crowell and Fox(1963) defined Knot theory as a kind of geometry, and one whose appeal is very direct because the objects studied are perceivable and tangible in everyday physical space. It is a meeting ground of such diverse branches of mathematics as group theory, matrix theory, number theory, algebraic geometry, and differential geometry, to name some of the more prominent ones.

The core composition of the paper is about Hogben central polygonal numbers. The researcher chose this topic for it has many interesting properties and has some applications that can be used.

STATEMENT OF THE PROBLEM

This study aims to determine the properties, relationships and applications of Hogben number.

The study seeks to answer the following specific problems:

1. How are the properties of Hogben Central Polygonal numbers proven?
2. What are the generators of Hogben Central Polygonal number?

3. How is Hogben Central Polygonal number related to other numbers such as:
   - 3.1. Pronic number;
   - 3.2. Lazy Caterer's Polygonal number;
   - 3.3. Triangular numbers;
   - 3.4. Alexander Polynomials; and
   - 3.5. Square Numbers?

4. How is Hogben Central Polygonal number applied to the following:
   - 4.1. Arithmetic Sequence;
   - 4.2. Number of Walks in Complete Graph;
   - 4.3. Number of Interior Regions in Intersecting Circles; and
   - 4.4. Alexander Polynomial?

METHODOLOGY

The methods of research used in this paper are descriptive and expository methods. Descriptive method is fact finding with enough interpolation. It includes the study on factors or current condition about the nature of a group (Wiersma & Jurs, 2005). Since the present study concentrated on Hogben numbers, its properties and generators that helped in developing this kind of number, then the descriptive method of research is the appropriate method to use.

Expository means to "expose" information and to inform, explain, describe or define the study to the readers. The study is expository in nature since it exposed and explained the study in detail.

BASIC RESULTS

This part concentrates on definition and examples of Hogben Central Polygonal Number.

3.1 Definition of Hogben Central Polygonal Numbers

Definition 3.1.1. Hogben Central Polygonal number is an integer generated by the sequence in the form $n^2 - n + 1$ for $n \in \mathbb{Z}^+$. The set of Hogben Central Polygonal numbers written in a specific order is called Hogben Central Polygonal sequence. The n^{th} Hogben Central Polygonal number in the sequence is denoted by H_n. The first few terms of this sequence are

1, 3, 7, 13, 21, 31, 43, 57, 73, 91, and 111.

For the first 100 terms of the sequence are found in Appendix A. In general, the nth term is given by

$$H_n = n^2 - n + 1, \text{ for } n \in \mathbb{Z}^+.$$

Example 3.1.1. To find the 51st Hogben Central Polygonal number, note that the n^{th} Hogben Central Polygonal number is given by $H_n = n^2 - n + 1$, for $n \in \mathbb{Z}^+$. Thus, the 51st can be solved as

$$\begin{aligned} H_n &= n^2 - n + 1 \\ H_{51} &= (51)^2 - 51 + 1 \\ &= 2551. \end{aligned}$$

Therefore, then 51st Hogben Central Polygonal number or H_{51} is 2551.

Example 3.1.2. The integer 1057 is a Hogben Central Polygonal number. To determine the position of the Hogben Central Polygonal number to its sequence is by letting n be the number term of 1057, then by using Definition 3.1.1,

$$n^2 - n + 1 = 1057,$$

this implies that

$$n^2 - n - 1056 = 0.$$

Factoring the left side of the last equation gives

$$(n - 33)(n + 32) = 0.$$

Since n is a positive integer, then take $n = 33$. Therefore, 1057 is the 33rd Hogben Central Polygonal number.

3.2 Generating Function of Hogben Central Polygonal Number

Theorem 3.2.1. The generating function of the Hogben Central Polygonal sequence is $\frac{1-2x+x^2}{(1-x)^3}$.

Proof. This is to show that the constant coefficients of the polynomial series form of $\frac{1-2x+x^2}{(1-x)^3}$ will generate Hogben Central Polygonal numbers. Note that the partial decomposition of $\frac{1-2x+x^2}{(1-x)^3}$ is

$$\frac{1-2x+x^2}{(1-x)^3} = \frac{A}{1-x} + \frac{B}{(1-x)^2} + \frac{C}{(1-x)^3}.$$

Solving for the numerators, consider the following computations:

$$\frac{1-2x+x^2}{(1-x)^3} \quad \frac{A}{1-x} + \frac{B}{(1-x)^2} + \frac{C}{(1-x)^3}$$

$$= \quad \frac{A(1-x)^2 + B(1-x) + C}{(1-x)^3}$$

$$= \quad \frac{A - 2Ax + Ax^2 + B - Bx + C}{(1-x)^3}$$

Then by solving the equality, $A = 3$, $B = -4$ and $C = 2$. And

$$\frac{1-2x+x^2}{(1-x)^3} = \frac{3}{1-x} - \frac{4}{(1-x)^2} + \frac{2}{(1-x)^3}$$

Thus,

$$\frac{3}{1-x} = 3 + 3x + 3x^2 + 3x^3 + 3x^4 + 3x^5 + \cdots$$

$$\frac{-4}{(1-x)^2} = -4 - 8x - 12x^2 - 16x^3 - 20x^4 - 24x^5 + \cdots$$

$$\frac{2}{(1-x)^3} = 2 + 6x + 12x^2 + 20x^3 + 30x^4 + 42x^5 + \cdots$$

Adding these three will yield to

$$\frac{1-2x+x^2}{(1-x)^3} = 1 + x + 3x^2 + 7x^3 + 13x^4 + 19x^5 + \cdots$$

Since the coefficient of the right part of the equation are all elements of Hogben central polygonal number, then generating function is $\frac{1-2x+x^2}{(1-x)^3}$. ■

3.3 Recurrence Relation of Hogben Central Polygonal Number

Theorem 3.3.1. Given the initial Hogben numbers where $H_0 = 1$ and $H_1 = 1$, then the next Hogben numbers are solved by the recurrence equation

$$H_n = -(n-5)H_{n-1} + (n-2)H_{n-2},$$

for $n > 1$.

Proof. Consider the following solution:
Therefore, $H_n = -(n-5)H_{n-1} + (n-2)H_{n-2}$. ■

$$\begin{aligned}
-(n-5)H_{n-1} + (n-2)H_{n-2} &= -(n-5)((n-1)^2 - (n-1) + 1) \\
&\quad +(n-2)((n-2)^2 - (n-2) + 1) \\
&= -(n-5)(n^2 - 2n + 1 - n + 1 + 1) \\
&\quad +(n-2)(n^2 - 4n + 4 - n + 2 + 1) \\
&= -(n-5)(n^2 - 3n + 3) + (n-2)(n^2 - 5n + 7) \\
&= -(n^3 - 8n^2 + 18n - 15) + (n^3 - 7n^2 + 17n \\
&\quad - 14) \\
&= -n^3 + 8n^2 - 18n + 15 + n^3 - 7n^2 + 17n - 14 \\
&= n^2 - n + 1 \\
&= H_n
\end{aligned}$$

Illustration 3.3.1. Solving for H_6 using the previous theorem, the following equations are derived:

$$\begin{aligned}
H_2 &= -(2-5)H_1 + (2+2)H_0 &&= -(-3)(1) + (2-2)(1) &&= 3 \\
H_3 &= -(3-5)H_2 + (3+2)H_1 &&= -(-2)(3) + (3-2)(1) &&= 7 \\
H_4 &= -(4-5)H_3 + (4+2)H_2 &&= -(-1)(7) + (4-2)(3) &&= 13 \\
H_5 &= -(5-5)H_4 + (5+2)H_3 &&= -(0)(13) + (5-2)(7) &&= 21 \\
H_6 &= -(6-5)H_5 + (6+2)H_4 &&= -(1)(21) + (6-2)(13) &&= 31
\end{aligned}$$

Therefore, $H_6 = 31$.

CONCLUSIONS

Based on the findings, the following conclusions were drawn.

1. Twelve interesting properties were derived from Hogben Central Polygonal numbers

2. Generators of Hogben Central Polygonal Numbers could easily produce a Hogben number.

3. Hogben Central Polygonal Numbers are related to Pronic number, Lazy Caterer's Polygonal number, Triangular number, Alexander polynomial, and Square number .

4. Hogben Central Polygonal Numbers were applied in Arithmetic Progression, the problem of the maximum number of interior regions form by intersecting circles, identifying the number of walks in a complete graph, Cyclotomic Polynomial, and Knot Theory.

RECOMMENDATIONS

Based on the findings and conclusions, the following recommendations were given.

1. Proofs in each theorem or proposition may be reviewed.

2. A quest for other properties, relationships and applications of Hogben number may be done.

3. The following topics maybe conducted:

   3.1. Properties and Applications of Cyclomatic Polynomial
   3.2. The Convergence or Divergence of the Limit of the Ratio of two Hogben Central Polygonal numbers.
   3.3. Number Structural System of Special Numbers

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Behavioral
Research

AN ASSESSMENT OF THE INFORMAL MONEY LENDING PRACTICES TO THE MICRO-ENTREPRENEURS

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Jackilyn Pido

INTRODUCTION

During these hard times, a lot of people will seek the help of those engaged in money lending business. It is the way to help support their families, to support financial needs of micro-entrepreneur and also to ease poverty.

Informal money lenders are money lenders who are not licensed to do money lending business. “5’6 is an example of informal money lending business and we are all aware of this kind of informal lending business which is patronized by some micro-entrepreneur and people who wants to put-up a new business in urban areas. “5-6” is the term use in such a reason that they lend money with 20% interest. Like for example, if you borrow from them worth 500 pesos, you will be returning it at the amount of 600 pesos or 20% interest rate within one month or upon the agreed condition.

Micro-entrepreneurs are the most patronizing party in this form if business because they are the ones who are in needs of financial capital for the daily financing activities of their businesses. In order for us to understand and give us the idea why do they are more preferred to borrow in Bombay than other formal institutions, the selected researcher’s wish to understand and measure the effects of this form of business to them, the advantages and the disadvantages.

This research aims to know the assessment of informal money lending practices to the micro-entrepreneur. In order to find ways in understanding the behavior of micro-entrepreneurs and to identify and recommend solution for the problem encountered between informal money lenders and micro-entrepreneurs, researches conduct this research study to know more about the strength, weaknesses, and threats of the informal money lending business and in order to formulate reasonable decision that will lead to the competitive advantages in the formal money lending businesses. Researchers try to study and analyze if the informal money lending business if it is recommendable or not to the micro-entrepreneurs and to the general public.

STATEMENT OF THE PROBLEM

This study aimed to determine the assessment of the informal money lending practices to the micro-entrepreneurs.

Specifically, it sought to answer the following questions.

1.) What is the profile of the respondent in terms of the following:

- 1.1 Age
- 1.2 Sex
- 1.3 Civil Status
- 1.4 Occupation
- 1.5 Monthly Income
- 1.6 Educational Attainment

2.) What are the reasons of Borrowing Money from Informal Money Lenders?

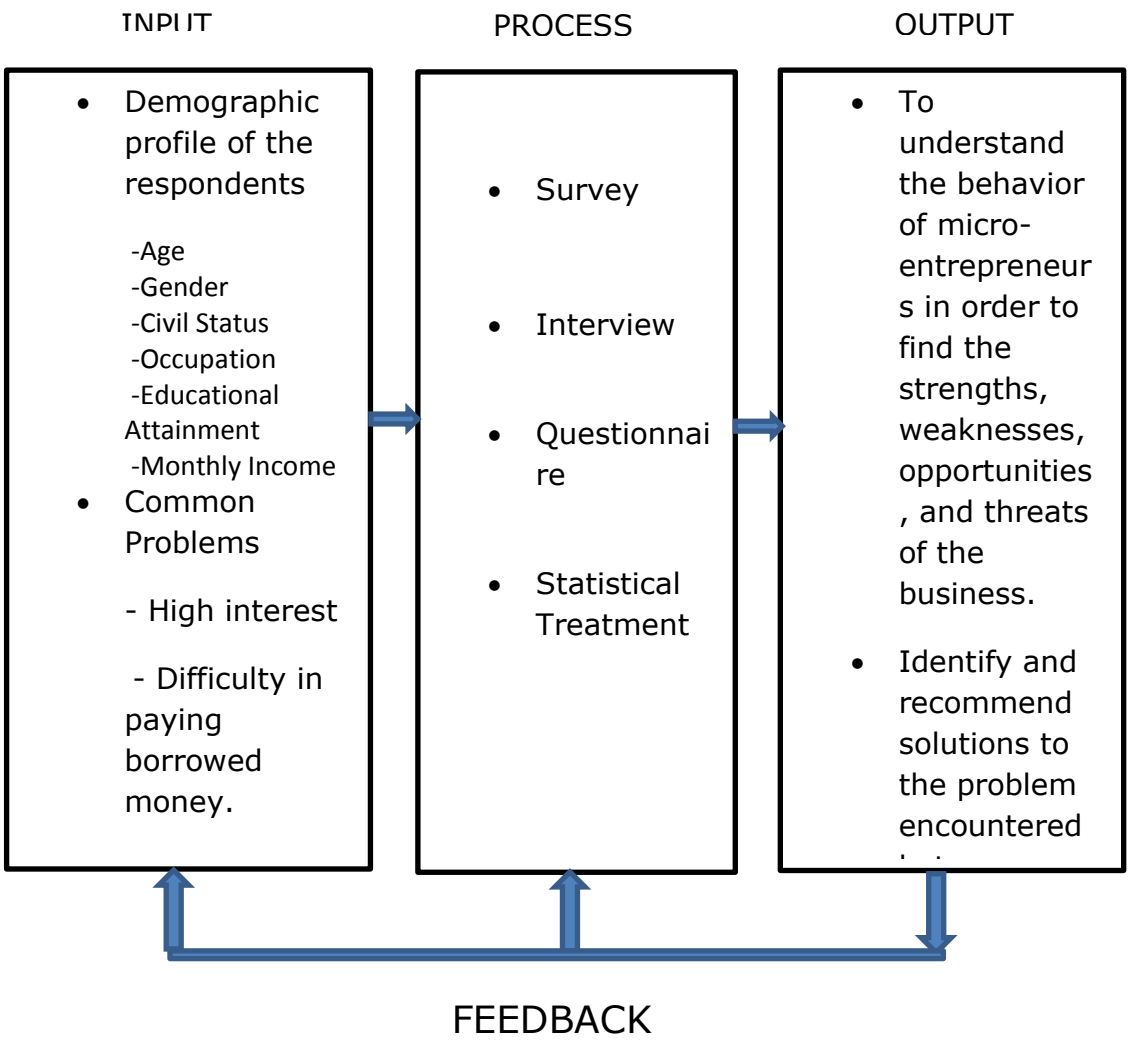
3.) What are the advantages on the part of the micro-entrepreneurs when they transact with informal money lenders?

4.) What are the problems encountered by the retailers when borrowing money from the informal money lenders?

5.) Is there any significant relationship between occupation and monthly income as regards to informal money lending practices as assessed by the respondents when grouped according to their profile ?

CONCEPTUAL FRAMEWORK

The development process in the conduct of the study is presented in the paradigm. The researcher conceptualized the Input-Process and Output (IPO) in the conduct of the study.



The Figure 1 stated the detailed and processed that the researchers have conducted this study.

The demographic profile contains the needed preferences about the background or profile of the respondents (age, gender, civil status, occupation). The statement of the problem contains all the questions on the survey questionnaire and the needed statistical data for the study in order to determine the number of the respondents.

The researcher processed this study with the use of questionnaires distributed to the respondents; tabulation of gathered data's using statistical treatment such as frequency and percentage. This was produced further interpretation and analysis of data's being collected.

The output will lead the researchers to understand and identify the behavior of micro-entrepreneurs in order to find the strength, threats and weaknesses of the business and identified the solution for in the proposed problems by both lenders and micro-entrepreneurs in order to prove the effectiveness of the said business to the micro-entrepreneurs in recommending alternative courses of action about the effectiveness of the informal money lenders to the micro-entrepreneurs.

SIGNIFICANCE OF THE STUDY

The study will be significant and will benefit the following:

Business Students**.** This study will give information to the business students that will serve as their source of information on the strength and weaknesses and in developing strategy about money lending business.

Micro-entrepreneurs who are Planning to Borrow Money from Informal Money Lenders. The result of this study may give awareness to micro-entrepreneurs who are planning to borrow money from informal money lenders in relation to the effect of informal money lenders in their business and how they will react in this situation.

Creditors. This study will help them look into possible situation that may guide them in deciding whenever they borrow money.

Barangay. Hopefully this study and its result may lead to the local government officials in implementing some laws and regulation that will help the micro-entrepreneurs in supporting their business.

Researchers. This research gave us additional knowledge and learning about classifications in hiring manpower where we can apply in the future.

Future Researchers. This research may serve as guidelines to their chosen course and chosen problem.

LITERATURE AND STUDIES

Eugine Matura from Kigali in her write up about informal money lending stated that "this illegal money lending has high side effects because it affects property and individual's security as well as crippling the nation's economy".

Norunn Haugen found in their Literature that village lenders in Nepal lend only to individuals whom they know well. This indicates that village lenders know a potential borrowers risk type and we assume that screening problems for village lenders are largely solved by personalized relationships and interlink ages between markets. We suppose that village lenders do not face any significant screening costs. Both village and market lenders were active in all villages we visited. Market lenders who are not involved in local trade or village activities lack first-hand information about potential Borrowers 'credibility.

Manny Canto stated on his article entitled "In Depth" that "it is an open secret that theses Indian Nationals are doing business all over the Philippines and their business is within the ambit of economy. According to his research "Underground Economy: refers to the part of the economy that generates income, but goes untaxed.

Godofredo Rompers in his Suns Star commend on taxing "5-6" lenders. He states that "money lending among those whom the banks, would never extend a loan to, and those who believe borrowings from the banks is a lot of paper work and red tape, is a highly lucrative business operation, able it a lot of hard work, sacrifice and patience. Interest, I think it is well worth their sacrifice and patience. This kind of lending that is all over the rural areas is operated only by the so-called "Bombay" or the Indian Nationals.

Wulan stated in his study that informal money lending, informal credit in supply of formal credit in developing countries. Despite an increase in supply of formal credit in rural areas, informal lenders remain dominant source of credit for the poorest households. Improvements of productivity are important in development process. Productive investment requires funding and access to credit crucial for the purpose. Credit might also be a mean tide over bad time caused by sudden illness or an upcoming wedding for poor individuals. Previous studies of the informal credit market demonstrate extremely high informal interest rates charged on loans to poor individual order to make policies that can positively affect poor people's living conditions; we must understand how informal lenders set the interest rates.

As a developing country, the Philippines have a large informal sector comprised of micro-enterprises. Many of these are severely restricted small vendors operating in public markets, whose survival in business relies heavily on access to financing. The usually comes from the informal sector is called "5-6" because of the manner in which they lend, "which" charge nominal interest rate of 20% over an agreed period of time. A person who borrows 5 pesos from a "5-6" over a period of one week repays 6 pesos, including 1 peso interest. There are two types of 5-6 financiers found in Philippine public market they are Filipino and Indians (Bombay) "5-6" money lenders that require collateral or documents from their borrowers. The success of the borrower's business and loan repayment history provide a gauge of the borrower's credibility. Five-Six money lenders undertake daily collections of payment in the morning, afternoon or both. A client's daily payment is determined by the sum of the principal borrowed plus its 20% nominal interest divided by the credit term. The loan arrangement is flexible; if the clients fails to pay one day, it is understood that he or she will pay for the missed the next time around.*(Mari Kondo).

METHODOLOGY

This chapter contains the research used such as the descriptive method of research with this, best as cited by Caraan (2010); descriptive research describes and interprets what is. It is concerned with conditions of relationships that exist: practices that are being felt, or trends that are developing.

It is also called statistical research. It is used to obtain information concerning the current status of the phenomena to describe, "What exists" with the respect to variables or conditions in a situation. The main goal of this type research is to describe the data and characteristics about what is being studied. The idea behind this type of research is to study frequencies, averages, and other statistical calculations. It is quantitative and uses survey and panels and also the use of probability sampling. The research method used is quantitative. Data levels of measurement are treated accordingly.

Respondents of the Study

The respondents of the study are composed of 25 vendors and 25 micro-entrepreneurs within the vicinity of Sampaloc, Manila.

Data Gathering Procedure

The study used survey questionnaire, interview, and structured questionnaire to gather vital information about "An Assessment of the Informal Money Lending Practices to the Micro-Entrepreneurs".

The researchers will collect tally and analyse the data for presentation and interpretation of the tables.

Data Gathering Instruments

Survey, Questionnaire, Statistical Treatment and Interview

Statistical Treatment of Data

The following statistical tools and techniques are used to ensure valid and systematic presentation, analysis and interpretation of data.

1. Frequency/Percentage

It is used to define as a number represented as a fraction of 100. Percentages are used to express numbers between zero and one. It is used to compare things and use it in ratios. It is denoted by the symbol %.

Formula:

$$P = \frac{f}{n} x100$$

Where:

P (Percentage) = The number of time any event occur in a period
F = Frequency note or proportion per number
N = Total number of Respondents answer

2. Weighted Mean

This was used to determine the level of effectiveness, problems encountered and the proposed measures in the Educational Technology.

Formula:

$$x = \frac{\Sigma fx}{n}$$

Where:

$\boldsymbol{x}$ = Mean

$\Sigma f\boldsymbol{x}$ = Total Criteria of Respondents and Frequency

$\boldsymbol{n}$ = Number of the Respondents

3. Chi Square Formula

The Chi Square test is the most important and most used method in statistical tests. The purpose of Chi Square test is to know as the difference between an observed frequency and expected frequency. This test sometimes is also used to test the differences between the two or more observed data. Its value can be calculated by using the given observed frequency and expected frequency.

Formula: $x^2 = \Sigma \frac{(O-E)^2}{E}$

Where:

O = Observed frequency

E = Expected frequency

$\sum$ = Summation

$\boldsymbol{x^2}$ = Chi Square value

RESULTS AND DISCUSSION

Problem No. 1 What are the reasons of Borrowing Money from Informal Money Lenders?

Scale	Range	Verbal Interpretation	Symbol
5	4.5 - 5.4	Strongly Agree	SA
4	3.5 – 4.4	Moderately	M
3	2.5 – 3.4	Agree	A
2	1.5 – 2.4	Disagree	D
1	0.5 – 1.4	Strongly Disagree	SD

Table 1

Weighted Mean and Frequency Counts on the Reason why micro-Entrepreneurs Borrow money from informal money lenders

CATEGORY	Weighted Mean	Verbal Interpretation
1. Capital for the Business	3.2	Agree
2. Everyday expenses of the business	3.74	Moderately
3. Lack of knowledge about the bank loan agreement	3.18	Agree
4. No Enough Collateral loan	3.3	Agree
5. Simple procedure of borrowing	3.72	Moderately
6. Simple negotiation with the lenders	3.72	Moderately
7. Daily allowance for family expenses	3.02	Agree
Overall Weighted Mean:	**3.41**	**Agree**

Table 1 manifested the reasons of the micro-entrepreneurs in borrowing money from an informal money lender. The capital for the business as reason show 3.2 in weighted mean which means they are agree. 3.74 is Moderately as everyday expenses of the business, lack of knowledge about the bank loan agreement as reason is agree that has a weighted mean of 3.18, the reason of no enough collateral to loan from bank has a weighted mean of 3.3 is agree, simple procedure of borrowing has weighted mean of 3.72 is moderately. Simple Negotiation with the lenders are agree 3.72 in weighted mean and reason as daily allowance for family expenses is also agree 3.02 in weighted mean.

Most of the respondents are moderately in the stated reasons above in terms of borrowing money. It means that there is also some collateral and procedures in borrowing money from an informal money lender. It seems that they have not enough ability to loan from bank and they preferred to borrow money from an informal money lender.

Problem No.2 What are the advantages on the part of the micro-entrepreneurs when they transact with informal money lenders?

Table 2

Percentage

Advantages	Agree	Disagree	Strongly Disagree
1. It is easy now to start the planned business because of the money that can be lend from informal money lenders.	94%	6%	0%
2. It is easy to transact with bombay	68%	32%	0%
3. Flexible payment	48%	28%	24%
4. Can borrow money through friends as referral	16%	72%	12%
5. Less time consuming when paying loans because bombay is doing house collection of payment	50%	48%	2%
6. No need to present any clearance and other businesses papers when borrowing money	74%	18%	8%
Total Percentage	58.33%	34%	7.67%

Percentage Distribution of the Advantages of borrowing money from an informal Money Lenders

The table 1 presented the easiness to start a business with money that can be lend from informal money lenders, 94% of them said that they are agree, 6% are disagree which is the lowest percentage. Most of the respondents who participated in this study which 94% of the total respondents are agree on the category that it is easy now to start the panned because of the money that can be lend from informal money lenders.

The table 2 shows the simpler to transact with an informal money lender, 68% of the respondents said that they are agreed and which has the highest percentage. 32% are disagreed and no one respondents answered not applicable. Most of the respondents in this study which 68% of the total respondents are agree on the category that it is simpler to transact with an informal money lenders, because it is not the same on banks that a lot of paper works and documents are required before you borrow money.

The table 3 shows the percentage of the flexibility of payment to informal money lenders. 48% of the respondents agrees which is the highest among the respondents who answered disagree with 28% and not applicable is 24%.

The table 4 shows the percentage of friends as referral in borrowing money, the 72% of the respondents agreed, and which is the highest percentage compare to those 16% of the total respondents who answered disagree, and 12% answered not applicable. Most of the respondents involved in this study which 72% of the total respondents are agreed that they can borrowed money through their friends as referrals.

The table 5 yielded the less time consuming when paying back money, 50% of the total respondents are agreeing, while 48% of them disagreed and 2% answered not applicable.50% of the total respondents that are involved in this study are agreed and it is an advantage that it is less time consuming when paying loans because of informal money lenders is doing house to house collection.

The table 6 revealed the percentage of advantages or disadvantages that there is no need to present any clearance when borrowing money from informal money lenders. 74% of the total respondents agreed, while 18% disagree and 8% answered not applicable. Most of the total respondents are 74% that are participating are agreed, and it is their advantage that their no need to present any clearance and business papers when borrowing money.

Problem No.3 what are the problems encountered by the retailers when borrowing money from the informal money lenders?

Table 3

Percentage

ADVANTAGES	STRONGLY DISAGREE
1. Higher interest rate compare to banks	54%
2. More prone to bankruptcy because of day to day basis of collection	26%
3. Difficulty in paying borrowed money	20%
TOTAL PERCENTAGE	100%

The table above illustrated the problems encountered by the micro-entrepreneurs when borrowing money from the informal money lenders. 54% of the respondents said that the higher interest rate compare to banks is the number one problem that they encounter when borrowing money , 26% of the respondents said that they can be prone to bankruptcy because of the day to day basis of collection and the least is 20% which is difficulty in paying borrowed money.

CONCLUSIONS AND RECOMMENDATIONS

1. Based on the accumulated and interpreted data given by the respondents using the questionnaires on the above mentioned study, we found out that the money lending business is a good source of capital to start a new business.
2. We also found out that it is easy to borrow money from informal money lenders even if proper agreement.

3. In terms of interest rate, informal money lenders are having higher interest rate compare to the banks and other formal institution.

4. There is no such document needed to be presented when borrowing money from informal money lenders.

5. Most of the respondents are under the age bracket of 21-30 years old who borrows money from informal money lenders.

RECOMMENDATIONS

1. When starting up a business still the best way to use ones own capital.

2. Based on our research informal money lending has the higher interest rate compared to the banks but informal money lending has the easiest way to borrow money.

3. Money lending business plays an important role in the Philippine Economy because being the one who infuses capital to micro-entrepreneurs; it helps the country in reducing unemployment rate.

4. Using the borrowed money from “5-6” as an alternative source of capital, the less fortunate or below poverty line family may start their own small scale business in public market areas.

5. We recommend that do not always borrow money from informal money lenders if you don’t have the ability to pay them in day to day basis of their collection.

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WITH OPEN ARMS: INTERFACING TEACHERS' SELF-EFFICACY AND THEIR INCLUSION ACCOMMODATION MODALITY

Rowena A. Bolotaolo

INTRODUCTION

The delivery of quality education to learners with certain exceptionalities is a primordial concern of the educational sector. Inclusive classrooms are organized to meet this urgency and to protect these children's right for a responsive and appropriate education. This global trend towards inclusion has transformed the regular classrooms into an academically neutral environment which provide equal opportunities for various abilities and talents or even the lack of it to be discovered or nurtured.

In the Philippines, the Department of Education through its DepEd Order No. 72, s. 2009 mentioned that inclusive education is founded on the philosophy of supportive acceptance of all children regardless of race, size, shape, color, ability or disability from external and internal stakeholders. With scarcity of special education teachers, the regular receiving teachers are in the forefront in the implementation of inclusive education thru the *initial phase* where the regular receiving teachers accept, support and form harmonious relationship with Special Education teachers; in its *transition phase*, they prepare children in regular classes to welcome and accept children with special needs, establish collaboratively with fellow teachers an appropriate and functional inclusive education program regarding curriculum, schedule, school program and activities, and review or update existing instructional materials for needed modifications; and in the *inclusion phase*, where the students are considered official enrolees in the regular class, the Inclusive Education Program (IEP) is implemented guided by a responsive modification of the curriculum, modeling and facilitating the appropriate relationships with special students, and assisting in securing and utilizing specialized equipment and materials.

This advocacy impinges on teacher's instructional capabilities and strategies to accommodate the diversity in abilities and capacities that exceptional or special education learners bring into the classroom. Such is particularly true to the general education receiving teachers handling inclusive learners. Variants of inclusion have been adopted to cater to this diversity. With the growing population of learners with special needs, inclusion or placement with regular class, mono-grade or multi-grade self-contained class and a resource room program are the three-prong approach adopted to provide access to special education classes in the Philippines. But, according to the Department of Education, only 2% of the targeted 2.2 million children with disabilities in the country are adequately served. Regular teachers most often receive the mainstreamed children with disabilities or exceptionalities with the barest know how on what to do or how to provide the education fitted for such students. They may not have the professional preparation, the necessary teacher behaviors to deal with such situation or attitude of enthusiastic acceptance toward inclusion of students with exceptionalities or disabilities in regular classes (Cannon, Idol & West, 1992; Deutsch Smith, 1998; Hallahan & Kauffman, 2003; Land, 2004).

In view of the advocacy for inclusive education, the study aimed to assess and determine how the receiving teachers' self-efficacy relate with their classroom accommodation modality in instructional approaches and techniques, assessment of learning, classroom management in inclusive setting, collaboration with the parents and Special Education teachers, and the way they deal with the behavior of the special learners. From these inputs, the intervention measure is proposed to improve the delivery of this practice.

METHODOLOGY

The descriptive-correlational research design was utilized to assess the extent of classroom instruction modality and self-efficacy of non-Special Education teachers or the regular receiving teachers who are handling inclusion classes. It involved a purposively selected 30 public elementary non-Special Education/receiving teachers who are handling inclusion classes from five public elementary schools. The study was conducted in the City Schools Division of Manila, Philippines. Permission to administer the survey questionnaire was sought from the Division Superintendent and the school principals. The respondents were informed that the gathered data were treated with the utmost confidentiality.

The researcher-constructed questionnaire consisted of statements to gather information on the classroom instruction modality and self-efficacy, of which the latter was adapted from an online self-efficacy questionnaire. Content validation of the questionnaire was done by graduate teacher education students who are handling inclusion classes. The reliability of the items was determined with a dry run. The computed Cronbach's alpha of 0.85 indicated that the items of the questionnaire are of good internal consistency and are reliable. To identify the extent of the classroom instruction modality, the following scale and interpretation were utilized: Always (4.20-500); Sometimes (3.40-4.19); Often (2.60-3.39); Rarely (1.80-2.59); Never (1.00-1.79). On the other hand, the extent of the regular receiving teacher's self-efficacy was evaluated using the following scale: 4.20-500 (Very great extent); 3.40-4.19 (Great extent); 2.60-3.39 (Moderate extent); 1.80-2.59 (Least extent); 1.00-1.79 (None).

Data yielded by the survey questionnaire were treated in depth using these statistical tools: weighted mean, frequency counting, ranking, and Pearson product-moment of correlation.

RESULTS

In Table 1, it can be gleaned that the overall assessment manifests the extent of the regular receiving teachers' inclusion accommodation modality in their classrooms. In general, the regular receiving teachers of inclusive children with disabilities sometimes utilize classroom accommodation modalities in providing for the educational needs of these pupils. In interacting with special learners in their classrooms, the regular receiving teachers deal always with the behavior of the special learners who needed special attention given that they are handling regular elementary students. More often than not, these regular receiving teachers are not provided with teacher assistants except pre-service student teachers who are only available for a certain number of training hours. This affects the quality of the interaction among the teachers, their regular students, and their students with special needs.

Of the five considerations which affect the extent of classroom accommodation modality of inclusive learners, four were rated as sometimes implemented. Guided by the Department of Education policy on inclusion, the regular receiving teachers sometimes provide for instructional approaches and techniques, assessment of learning, classroom management, and undertake collaboration with parents and other special education teachers. These manifest the regular receiving teachers' initiative and openness to accommodate learners with special needs in their classroom. Though this reflects the resistance that most often regular receiving teachers feel when confronted with this situation (Subban, Round, & Sharma, 2018), their beliefs about their efficaciousness concerning inclusive education needs to be immediately addressed. Likewise, it points to the need to capacitate these regular receiving

teachers with the knowledge, skills, and competencies to adequately provide for the educational needs of these types of learners in an inclusive setting. This has an impact on pre-service teacher education where curricular integration of special education is often not provided for other curricular offerings beside those with specialization in Special Education. Such a situation places the regular receiving teachers at a disadvantage when they are faced with a learner in special need in their regular classroom. Inclusion then becomes a challenging, and, possibly, stressful concern for the regular receiving teachers.

Table 1

Extent of classroom accommodation modality of inclusive learners

Criteria	Mean	Verbal Description	Rank
1. Instructional approaches and techniques	3.90	Sometimes	4
2. Assessment of learning	4.09	Sometimes	3
3. Classroom management in inclusive settings	4.18	Sometimes	2
4. Collaboration with parents and Special Education teachers	3.65	Sometimes	5
5. Dealing with the behavior of special learners	4.68	Always	1
Overall Assessment	**4.10**	**Sometimes**	

As reflected in Table 2, there is a great extent of self-efficacy of the regular receiving teachers of inclusive children in their work. Their affective processes manifest a very great extent of their dedication and commitment in their chosen field of the profession where trust in their teachers, feeling safe in school, and teacher-parents collaboration are essentially felt by their students in the inclusive setting. This is also supported by cross-cultural studies which found that self-efficacy in collaboration influence overall attitudes towards inclusion (Savolainen, Engelbrecht, Nel, & Malinen, 2011). This manifests the commitment, dedication, and professionalism of the regular receiving teachers to accommodate every learner in their classroom.

Three indicators obtained weighted means showing the great extent of teacher self-efficacy. The regular receiving teachers manifested a great extent of efficacy in the academic processes by providing the coaching and instructional support with materials and equipment to students who encounter difficulty in their academic tasks or activities. Secondly, motivational processes are provided to a great extent by encouraging a cooperative working environment in the classroom, enhance interest in the schoolwork, and manage disruptive behavior in the classroom as well. Thirdly, selection processes are undertaken with great extent by providing students with a variety of activities, assisting them in heterogeneous settings and reducing student absenteeism or drop-out. As of 21st -century learners, these children with special needs are exposed to digital or computer technologies in their homes or the community. With digital migrants even among children with special needs, teachers are most often challenged to have proficiency in using digital technologies in their inclusive classrooms. Not only that these technologies facilitate learning but they create motivation and sustain the interest of learners in their learning tasks. With access that is easily available in the environment, regular receiving

teachers may collaborate with parents or guardians to get the children with special needs to be constantly engaged in their studies.

Table 2

Extent of Receiving Teachers' Self-efficacy

Criteria	Mean	Verbal Description	Rank
Academic processes	**4.00**	**Great extent**	**2**
1. Keep students on the task on difficult assignments	4.03	Great extent	
2. Provide needed instructional materials and equipment	3.99	Great extent	
3. Provide coaching to students who have low performance	3.98	Great extent	3
Motivational processes	**3.98**	**Great extent**	
1. Get students to work well together	4.11	Great extent	
2. Increase the motivation of students with low interest in school activities	3.85	Great extent	
3. Get children to follow disruptive behavior in the classroom	3.98	Great extent	
Affective processes	**4.43**	**Very great extent**	**1**
1. Increase collaboration between teachers and parents	4.56	Very great extent	
2. Get students to trust their teachers	4.08	Great extent	
3. Make students feel safe in school	4.64	Very great extent	
Selection Processes	**3.83**	**Great extent**	**4**
1. Provide students with a variety of activities	3.98	Great extent	
2. Assist students in heterogeneous settings	3.30	Great extent	
3. Reduce student absenteeism/drop-out	4.22	Very great extent	
Innovation and Change Processes	**1.98**	**Least Extent**	**5**
1. Utilize multimedia instructional technologies	2.21	Least Extent	
2. Participate in professional development activities	1.84	Least Extent	
3. Collaborate with colleagues in instructional planning	1.90	Least Extent	
Overall Assessment	**3.64**	**Great Extent**	

There is least self-efficacy in responding to innovation and change in the utilization of multimedia instructional technologies, engaging in professional development activities, and collegial collaboration in instructional planning. These weak areas point to possible intervention measures and implications for future professional development provisions (Reina, Roldan, Hemmelmayr, & Klavina, 2019). As of 21st-century teachers, regular receiving teachers recognize the need to be relevant to their digital natives in their classrooms. But a greater challenge would be the disposition to adapt this digital or computer technologies in an inclusive classroom. This is very challenging for teachers who are ill-prepared in applying technology, particularly, information communication technology, in the classrooms. This can be a source of a learning gap between teachers and students. With digital natives, learners are oriented toward a constructive mode of information processing. This requires a multisensory approach to teaching techniques. The most efficient instructional technology that can be utilized by teachers is through the use of interactive technologies which expand the potential for

participation of students regardless of their learning style. Hence, there is a need to provide for capacity-building activities which will equip regular receiving teachers and special education teachers with technological, visual and information literacies. With better skills, the regular receiving teachers would have greater confidence and self-efficacy in handling inclusive classes since it is expected that teachers have acquired the instructional competence to teach both regular and students with disabilities (Tournaki & Samuels, 2016).

As shown in Table 3, the computed r of -0.73 and a coefficient of determination of 0.5323 implies a moderate negative correlation between the receiving teachers' self-efficacy and their classroom accommodation modality. The p-value of 0.0166 indicates that the result is not significant at $p<.05$; hence, this fails to reject the null hypothesis. It can be inferred that, despite the regular receiving teachers' self-efficacy and their classroom accommodation modality having no significant relationship, their personal convictions, professional competence and commitment propel them to accommodate special learners in their classrooms and provide for their education. Despite their resistance to implement inclusive practices, the regular receiving teachers accommodate their inclusive students primarily because it is a policy. Even without the prior training to handle inclusive classes and full self-efficacy to expectedly deliver on the instructional requirements and educational needs for these children with special needs, these regular receiving teachers have the basic teaching proficiency to handle effectively this type of learners. Although self-efficacy beliefs influence the readiness, and ability of teachers to adopt teaching practices that integrate inclusion in the classrooms (Subban, Round & Sharma, 2018), it is their professional and technical know-how which can facilitate the effective delivery of instructional services to these type of learning environment.

Table 3

Correlation Between Receiving Teachers' Self-efficacy and Classroom Accommodation Modality

Variables	Computed r	p-value	Decision on H_o
Receiving teachers' self-efficacy and Classroom Accommodation modality	-0.7296	0.162291	Fail to reject H_o

DISCUSSION

The diversity inside the inclusive classroom can be a gargantuan challenge to the regular receiving teachers whose regular students are already characterized by behavioral, attitudinal, and social differences. Without proper training, adequate experience in inclusive education and pupils' type of disability, meeting the student's educational, emotional, and social needs would require a teacher's strength of personality and multi-faceted instructional delivery strategies in effectively providing the best education delivery program for inclusive learners. This unique classroom situation requires preparing and supporting teachers to teach interactively since primary education teachers generally feel some adverse attitudes towards inclusion of pupils with special needs (De Boer, Jan Pijl, & Minnaert, 2010). While there are teachers who are more than willing to accept the challenge of being engaged in inclusion, the general education teachers were strongly negative about it (Geronimo, 2014). Positive perception, however, emerges towards the end of the process of inclusion (Halvorsen & Neary,

2001). Reinforcing the initiative to improve the regular teachers' preparedness to handle inclusive classes, the provision of effective inclusion teaching strategies and teacher training is primarily a vital key for a successful inclusion (Yang & Rusli, 2012; Pantic & Florian, 2015). With greater familiarization with inclusion, regular receiving teachers may change their attitudes and become committed implementers in the classroom.

While advocating for access, teachers' perceptions and beliefs about the inadequacy of quality administrative support and limited pre-service or in-service education in special needs continue to affect the extent of implementing inclusion as well as the quality of inclusion which are expressed thru the demands for reducing class size, more instructional materials, and adding of services (Mckenzie, 2010; Mukhopadhyay, Nenty, & Abosi, 2012; Dueck, 2003). This situation demands the effort and initiative to address capacity-building among the teachers who will implement the inclusion program. This may be done at the pre-service level of teacher preparation and as a teacher in-service training program.

Inclusion is viewed as a process where children with special needs are integrated in a regular class together with typical peers and their full acceptance to the school system where SPED teachers collaborate with regular teachers in creating and implementing appropriate instruction as well as families and other professionals in order to effect change and social justice (Geronimo, 2014; Halvorsen & Neary, 2001). The provision for inclusive education, on the other hand, occurs where students with disabilities received the support needed for chronologically age-appropriate general education in their schools and a developmental approach targeting the educational needs of all children, youth and adults (Halvorsen & Neary, 2001; Esmaquel II, 2012; Allen & Schwartz, 2000). However, among regular receiving teachers, there is an overall sentiment, resistance, less favourable attitude to implement inclusive practices, and possible impact or consequences of implementing inclusion of children with disabilities in their classrooms (Subban, Round & Sharma, 2018; Savolainen, Engelbert, Nel, & Malinen, 2011; Desombre, Lamotte, & Jury, 2019).

As a result of the investigation, the regular teachers provide within the mainstreamed classroom appropriate accommodation modality of inclusive learners which are geared to their capabilities and needs as well as any support and assistance that these inclusive learners may need. Hence, the teachers' professional commitment transcends their personal self-efficacy. This underscores the essential knowledge, skills, values, and dispositions that general education teachers should possess to successfully teach students in inclusive classrooms as well as the need to develop curriculum materials to enlighten them about students with disabilities such as materials which teach children about differences, including disabilities (Hallahan & Kauffman, 2003; Grskovic & Trzcinka, 2011).

The practical implication of the findings of the study is its concurrence to the widely accepted impression that teachers often face the challenge how to effectively teach students with disabilities in regular classrooms. However, this does not affect their self-efficacy since they can be assisted to devise a number of strategies for implementing inclusion and provide for the educational requirements of their students with disabilities. Concomitantly, teacher professional development program may have a positive impact in effecting a positive attitudinal change among the regular receiving teachers (Tournaki & Samuels, 2016; Saloviita, 2018; Reina, Healy, Roldan, Hemmelmayr & Klavina, 2019). Generally, capacity building programs are some effective means by which in-service teachers are prepared to implement radically new policies such as inclusion.

CONCLUSION

A myriad of factors affects how teachers accommodate children with special needs in an inclusive classroom setting. With the basic inspiration of guiding the future generation, teachers adapt to challenges that they encounter in their daily teaching engagement. With the policy of inclusion as advocated to bridge the discriminating barrier in abilities and capacities among students, regular teachers generally find themselves wanting in their preparedness to effectively implement this program at the classroom level. This is partly not their fault since pre-service teacher preparation in the elementary level, except for those pursuing special education as their field of specialization, is aimed at training generalist practitioners. Thus inclusion poses a great challenge even to a veteran teacher. In order to achieve instructional effectiveness, regular receiving teachers utilize different instructional strategies to accommodate the heterogeneity of their inclusive classroom. Despite their ill-preparedness, they are able to transcend the uncertainty of their self-efficacy in meeting the challenge of an inclusive classroom. Hence, the regular receiving teachers' innate love of teaching and their professional commitment more than their self-efficacy impact on maximizing their classroom engagement of their inclusive learners.

In order to assist the regular receiving teachers to cater to the educational needs of the students with disabilities in an inclusive classroom, there is a need to provide for a professional development activity which is intended to enrich their preparedness as effective and efficient instructional leaders. To respond to this need, a two-day training program is hereby proposed to provide support, assistance, and improvement of pedagogical practices of regular receiving teachers in an inclusive classroom and address concerns on classroom instruction of children with special needs. The primary objective of the proposed training program is to equip the in-service teacher with the knowledge, skills, and attitudes to effectively implement inclusion in their regular classrooms. It consists of six parts: (a) situation and legal mandates of inclusive education, (b) inclusive education: definitions and concepts, (c) preparing the school for inclusive education, (d) effective pedagogy in a digital milieu, (e) assessing children with special needs in inclusive classroom, and (f) home-community involvement. It is, likewise, recommended that the pre-service teacher education curricula should integrate pedagogical concepts and techniques in implementing inclusion in order that even at an earlier stage, prospective teachers would be ready, motivated, and develop the attitude and the ability to adapt and maximize inclusive pedagogical practices in their classrooms.

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EMPOWERING STUDENTS THROUGH COLLABORATIVE TEACHING AND SHARING MATHEMATICS

Elsa R. Cagatan

INTRODUCTION

Differentiating instructions to a class of multiple learning types is a necessity technique of an educator to ensure complex competency skills for teacher education learners. For a mathematics educator who would like to assess the learners with different processes just to evaluate the mathematical skills, emotional being, mastery of the lessons, cognitive aspects, as well as leadership and the ability to follow instructions- is a very tasking process and time consuming. However, this study aims to have all in one process that could be used in math education. Meanly to use the process of Collaborative Teaching - Sharing Mathematics while being responsible of each other's competency skills within the group and constructing a product called Group – Made Assessment Instrument produced using mobile technology for their reviewer. This a student-centered project-based teaching while sharing knowledge and skills to all the members of the group. The subject of the study is the math students (freshmen).

Knowingly, most students know the importance of mathematics for everyday living, however, thinking the agony of the processes in the classroom in doing it tends to hinders the learning especially to the disinterested learners. By giving them chance and to discover the worth of having fulfilled the task that can plait the interest to do more and achieve more. Enriched their experiences in learning by doing and sharing knowledge and skills collaboratively within the group. Giving a sense of pride in achieving the tasks while helping. Somehow, the needy freely received help without being embarrassed for incapable of doing tasks itself and also develop teamwork without the fear of expressing their understanding for the task be done.

According to Slavin (1989), for effective collaborative learning, there must be "group goals" and "individual accountability". When the group's task is to ensure that every group member has learned something, it is in the interest of every group member to spend time explaining concepts to groupmates. Research has consistently found that students who gain most from cooperative work are those who give and receive elaborated explanations (Webb, 1985). Therefore, this study incorporated both "group goals" and "individual accountability."

In a collaborative learning environment, learners are challenge both socially and emotionally as they listen to different prospective (archived, wceruw. Org..), shared inquiry as a process of reform, (Mc. Gregu, J.,1990), underlying process and effective techniques, the changing face of college teaching its new direction for teaching and learning (Gerlach, J.M.,1994), Teacher education learners have gained more benefits in a collaborative learning such as; learning and listening from peers is a vital skills that develop understanding one another's opinion; promotion of critical thinking as they work together to solve given problem; learning to wait your turn while being assertive enough to make ones voice heard is a useful ability for a teacher to be; cooperation and sharing within a group even when conflict arises; learning to agree or disagree respectfully engaging constructive criticism is another useful skill; placing value on everybody's contribution building confidence and worth of group achievement (www. Fercoseating.com). Collaborative Teaching-Sharing could develop more values to all members and be comfortable with each other because the more thinkers the more work be done effectively.

In the statistical treatment the nonparametric test is used, is a hypothesis test that does not require any specific conditions concerning the shape of populations or the value of any population parameters. Nonparametric tests are easier to perform (they do not require normally distributed populations). They can be applied to categorical data (such as genders of survey responds). Stronger evidence is required to reject a null hypothesis. One of the easiest nonparametric tests to perform is the sign test.

The purpose of the study is to determine the "Collaborative Teaching-Sharing" enhance students' *mathematical skills and teamwork by constructing assessment instrument (Multiple choice 50 items with computation if needed)* called Group- Made Assessment Instrument (GMAI) *produced by the group themselves as reviewer* while involvement each other's knowledge and skills to achieve the tasks given with accountability. It specifically answers the following question;

1. Is there any significant difference between the performance of the students after answering the Group- Made Assessment Instrument (GMAI) and the teacher made test?

METHODS AND RESEARCH DESIGN OF THE STUDY

The independent variables are the performance after answering the GMAI and the result of teacher made test. The content of the GMAI was chosen by the group and the teacher made test by the teacher, however, both are according to the table of specifications of the course. The object of the study is from BSE-math students in the college, a one group experimental study given GMAI Test and checked by themselves with the teacher intervention as a review for the final test. After two days the teacher made test was given.

Statistical treatment used is the sign test for the test of significance. The **Sign test** is a non-parametric test that is used to test whether or not two groups of scores are equally sized. The sign test is used when samples result is ordered in pairs, where the random variables are mutually independent. It is based on the direction of the plus and minus sign of the observation, and not on the degree of scale. It is also called the binominal sign test, with $p = 0.5$. This is considered, because it tests the pair value below or above the median and it does not measure the pair difference.

A nonparametric test is a hypothesis test that does not require any specific conditions concerning the shape of populations or the value of any population parameters. Nonparametric tests are easier to perform (they do not require normally distributed populations). They can be applied to categorical data (such as genders of survey responds). They are less efficient than parametric tests. Stronger evidence is required to reject a null hypothesis. One of the easiest nonparametric tests to perform is the sign test.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
GCAI	27	27	25	25	23	22	21	19	18	17	17	17	16	16	16	15	14	14	13	12	12	11	11	10	8	7
TMT	27	20	25	23	15	25	28	29	22	34	18	17	24	27	26	32	31	26	23	27	23	27	23	22	25	25
	0	-	0	-	-	+	+	+	+	+	+	0	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	0	7	0	2	8	3	7	10	4	17	1	0	8	11	10	17	17	12	10	15	11	16	12	12	17	18

Presentation of Result

Number (0) = 3 Number (+) = 20 Number (-) = 3

H_0: there no significant difference between the performance of the students after answering the Group- Made Assessment Instrument (GMAI) and the Teacher Made Test (TMT)?

Frequencies

		N
GMAI	Negative Differences	3
	Positive Differences	20
	Ties	3
		26

Test Statistics (Sign Test)

	GMAI - TMT
Z – value	-2.917
Assumption Significant 2- tailed	0.000
Critical value (k)	5. 117

INTERPRETATION

The subject of the study is 26 students to tell the difference of the performance as measured after answering the GMAI compare to the difference in TMT. The result of the trials had 20 students are positive difference and 3 are negative difference while 3 students got 3 difference. Statistically significant median difference is Z value = - 2.917 compared to the Critical value = 5.117, that reject the null hypothesis. It shows that there is significant difference in the performance of the students using Group-Made Assessment Instrument (GMAI) before the Teacher Made Test (TMT).

DISCUSSION AND CONCLUSION

The initiative of the study is to determine the "Collaborative Teaching-Sharing (CTS)" enhance students' *mathematical skills and teamwork by constructing assessment instrument (Multiple choice 50 items with computation if needed)* called Group- Made Assessment Instrument (GMAI) *produced by the group themselves as reviewer* while involvement each other's knowledge and skills to achieve the tasks given with accountability (Webb, 1985 and Slavin (1989)), that the groupmates understand the concepts and develop the skills needed to manipulate and attain the objective. In a collaborative learning environment, learners are challenge both socially and emotionally as they listen to different prospective (archived, wceruw. Org..), shared inquiry as a process of reform, (Mc. Gregu, J.,1990), underlying process and effective techniques, the changing face of college teaching its new direction for teaching and learning (Gerlach, J.M.,1994), Teacher education learners have gained more benefits in a collaborative learning.

As human, learners tend to associate to those who they are similar and join a group with their own decision that made feel comfortable, more often it is not real in an environment that is coming from different culture and habitat. So, the educators' task is to observe heterogeneity among the group and modify conditions and rules for each group and members for whatever conflict may come, straight forward that they do not leave any opportunity for longer disagreement and misunderstanding.

Hints for better learning group (Boween,D.D., and Jackson,C.N., 1985-6). If appropriate give to each group: Before the project begin: Expect them to learn, enjoy and to discover, team up to those who don't know each other; As the group starts: make a good impression, build team, improve self-disclosure, observe and give feedback, let silent student involve and work on issues in the group and vary leadership style,; after task done recognize all members contribution and accomplishments.

The study uses the non-parametric particularly the sign test. A nonparametric test is a hypothesis test that does not require any specific conditions concerning the shape of populations or the value of any population parameters. Nonparametric tests are easier to perform (they do not require normally distributed populations). They can be applied to categorical data. Sign test for population median assign a (-) sign if the item difference from teacher made test to GMAI and (+) if positive, meanwhile if no difference or same value use (0). Then match the number of negative and the number of positive while ignoring zero, if the difference is likely different between the number (+) and (-) sign from the hypothesized value, reject the null hypothesis.

As to the purpose of the study to determine CTS improve mathematical skills and teamwork while constructing assessment instrument (GMAI) for reviewing the previous lesson tackled. The dependent variable is the performance of the subject matched and paired and the independent variable is the same participants were measured at the two points of trials. The intervention of the teacher upon checking right after taking the GMAI with discussion and explanation if necessary depends on the behavior of the students. Same group of participants took the teacher made test during the next meeting.

The result of the trials indications statistically significant median difference is Z value = - 2.917 compared to the Critical value = 5.117, that reject the null hypothesis. It shows that there is significant difference in the performance of the students using Group-Made Assessment Instrument (GMAI) before the teacher made test this gives safe scientific claimed to infer that since there is positive effect of using GMAI to the students' performance (though the degree is not identified) the Collaborative Teaching Sharing process also affect favorably the students' performance and valuing diversity of the members. Further studies be made to determine the degree of effectiveness of the process in a larger sample and used other test statistics. The developed materials be also used and tested to another subject and sample.

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PAGBUO AT PAGTAYA NG ALTERNATIBONG KAGAMITAN SA PAGSULAT NG PANANALIKSIK SA WIKANG FILIPINO

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INTRODUKSIYON

Napakahalagang bahagi ng ating buhay ang paglinang ng kasanayan sa pagpapahayag lalong-lalo na sa larangan ng pagbasa at pagsulat. Sa mundo ng modernisasyon at globalisasyon, ang paggawa ng isang pananaliksik ang siyang nagsisilbing daan upang makaangat ang isang bansa. Isinilang ang gawaing pananaliksik nang ang mga naunang tao ay nagsimulang magtanong tungkol sa mga bagay-bagay at nagsimula na ring maghanap ng mga kasagutan sa mga tanong.

Ang pananaliksik ay isang proseso ng pangangalap ng mga totoong impormasyon na humahantong sa kaalaman. Isinasagawa ito sa pamamagitan ng paggamit ng mga nalalaman o napag-alaman na. Matatanggap ang karagdagang kaalaman sa pamamagitan ng pagpapatunay ng mga panukala (teorya) o mga pamamaraan at sa pagsubok sa mas mainam na pagpapaliwanag ng mga napapansin o obserbasyon. Ayon kay Good (1993), ang pananaliksik ay isang maingat, kritikal, at disiplinadong pag-alam sa pamamagitan ng iba't ibang teknik at paraan batay sa kalikasan at kalagayan ng natukoy na suliranin tungo sa klaripikasyon at resolusyon nito. Binanggit din ni Garcia (2008) na ang pananaliksik ay pahayag sa mataas na lebel ng pagsulat dahil nangangailangan ng pangangalap ng datos, pag-iimbestiga, panunuri, pagbibigay-hinuha, konklusyon at rekomendasyon.

Sa pagpasok ng isang estudyante sa kolehiyo, kadalasang kinakaharap niya ang isa sa pinakamapanghamong gawain – ang pananaliksik at pagsulat ng pananaliksik. Ang bawat mag-aaral ay dapat matutong manaliksik hindi lamang para sa kanilang asignaturang pananaliksik kundi kahit sa anumang mga asignatura o kurso na inilatag at isinasakatuparan sa kasalukuyan na naaayon sa kurikulum ng bawat paaralan o anumang institusyon na may sapat at wastong layunin para makamit ang pangkalahatang pagkatuto ng bawat mamamayang Pilipino.

Ayon sa CHED Memorandum Order 75 s. 2017, isang mahalagang aspeto para sa mga mag-aaral na kumukuha ng kursong Batsilyer ng Sekondaryang Edukasyon ang kaalaman sa pagsulat ng pananaliksik. Itinatadhana nito na sa iba't ibang medyor ang pagkakaroon ng komponent ng pananaliksik o riserts upang lubusang malinang ang kasanayan ng mga mag-aaral. Hindi na bagong kaso ang kahirapan sa pagsulat ng pananaliksik. Para sa maraming mag-aaral, ang pagsulat ng isang papel-pampananaliksik ay isang mabusising proseso na nagpapahirap sa kanilang pag-aaral sa antas tersyarya. Para naman sa iba, ang pagsulat ng papel-pampananaliksik ay kabagut-bagot at walang sigla. Ngunit halos lahat ay nagtitiis na maisakatuparan ang proseso ng pananaliksik sapagkat ito ay isang pangangailangan sa mga asignatura na hindi nila maiwasan. (Chan, et al., 2002). Lumalabas na talagang may mga suliraning kinakaharap ang mga mag-aaral sa pagbuo ng kanilang pananaliksik. Isa ng patunay rito ang binanggit ni Dizon (2018) sa kanyang pag-aaral na mababa ang kaalaman ng mga mag-aaral sa pagpili ng paksa at sa pangangalap ng mga datos, impormasyon at sanggunian. Upang makapagsaliksik, nagpupunta ang mga mag-aaral sa mga aklatan, museo o nakikipanayam sa mga dalubhasa upang makapangalap o makakolekta ng mga impormasyon. Napakasistematiko at matagal na panahon ang kailangang gugulin upang mahanap ang sagot, kaya naman mahirap ang gawin ito lalo na sa mga taong kulang ang mga sangguniang maaaring paghanguan sa pagsulat ng pananaliksik. Halos gayon

din ang mga obserbasyong inilahad ni Bernales sa isang pakikipapanayam sa kanya (2003). Ilan sa mga ispekulasyon niya kung bakit gayon na lamang ang kakulangan sa kahandaan ng maraming mag-aaral sa pananaliksik ay a) ang kahinaan ng programang nakatuon sa paglinang ng mga kasanayang pampananaliksik sa mga mataas na paaralan, b) kawalan ng institusyunalisadong programa sa pananaliksik sa mga paaralan, at c) pagtuturo ng asignaturang pananaliksik ng mga gurong hindi naman gaanong marunong magsaliksik.

Ang problemang kinakaharap ng mga mag-aaral sa iba't ibang pamantasan o unibersidad ay problema ring maituturing sa kalagayan ng pagtuturo ng mananaliksik.

Sa isang panayam na ginawa ng mananaliksik sa isa sa mga propesor na nagtuturo ng pananaliksik, iniisa-isa ng guro ang kanyang obserbasyon sa mga mag-aral sa pagsulat ng pananaliksik. Isa sa kanyang napansin ay ang kakulangan ng mga kagamitan na may kinalaman sa Filipino na makatutulong sa pagpapaunlad ng kasanayan ng mga mag-aaral sa pagsulat ng pananaliksik. Upang mapabulaanan ang ganitong ideya ay binisita rin ng mananaliksik ang silid-aklatan ng institusyon. Ngunit kulang ito upang maging sanligan ng mga mag-aaral sa pagsulat ng kanilang pananaliksik. Nagtungo rin ang mananaliksik sa tanggapan ng riserts ng institusyon upang malaman ang mga programang nakahain sa pagsulat ng pananaliksik ng mga mag-aaral. Ayon sa direktor na nakapanayam, may mga programa ang institusyon para sa mga mag-aaral gaya ng mga seminar na nagsimula na noong nakaraang taon. Nagsimula na itong ipatupad sa ilang kolehiyo gaya ng *College of Industrial Technology* at *College of Engineering*. Ngunit nabanggit din na sa kasalukuyan ay pinagpaplanuhan na rin nila ang magiging programa tungkol sa riserts ng ibang kolehiyo kasama ang *College of Education*.

Ito ang hamon sa bawat guro, paunlarin ang kasanayan ng mga mag-aaral sa kapaki-pakinabang na paraan. Maisasakatuparan ito ng guro kung siya ay may sapat na kagamitang magagamit upang paunlarin ang kakayahan at kasanayan ng mga mag-aaral. Ayon kay Abad (1996), ang kagamitang panturo ay anumang karanasan sa bagay na ginagamit ng guro bilang pantulong sa paghahatid ng mga katotohanan, kasanayan, saloobin, palagay, kaalaman, pag-unawa, at pagpapahalaga ng mga mag-aaral upang maging konkreto, daynamik at ganap ang pagkatuto. Ito rin ay isang tanging gamit sa pagtuturo na nagtataglay ng gabay para sa mag-aaral at guro na tumitiyak na sa bawat karagdagang nilalaman, teknik ng paglalahad, pagsasanay at paggamit ng nilalaman at paraan ng pagtuturo gamit ang iba't ibang teknik. Ayon kay Silva (2008), kailangang makita o masalamin sa isang kagamitang pampagtuturo ang mahusay na kurikulum at pagtuturo. Binanggit naman ni Tomlinson (2001) na:

> *"Ang pagdebelop ng kagamitan ay isang larangan at gawain. Bilang larangan ito'y pag-aaral sa mga prinsipyo at hakbangin sa pagbuo ng kagamitang panturo, implementasyon at ebalwasyon nito. Bilang gawain, kinasasangkutan ito ng produksyon, ebalwasyon, at paggamit ng mga guro ng kagamitang panturo sa kani-kanilang klasrum*."

Alinsunod sa Batas Pambansa Blg. 232, ang mga guro ay responsable sa mabisa at mahusay na pagtatamo ng mga layunin sa pagkatuto sa pagtupad ng pambansang layunin sa kabila ng kakauntian ng mga kagamitang pamparaalan.

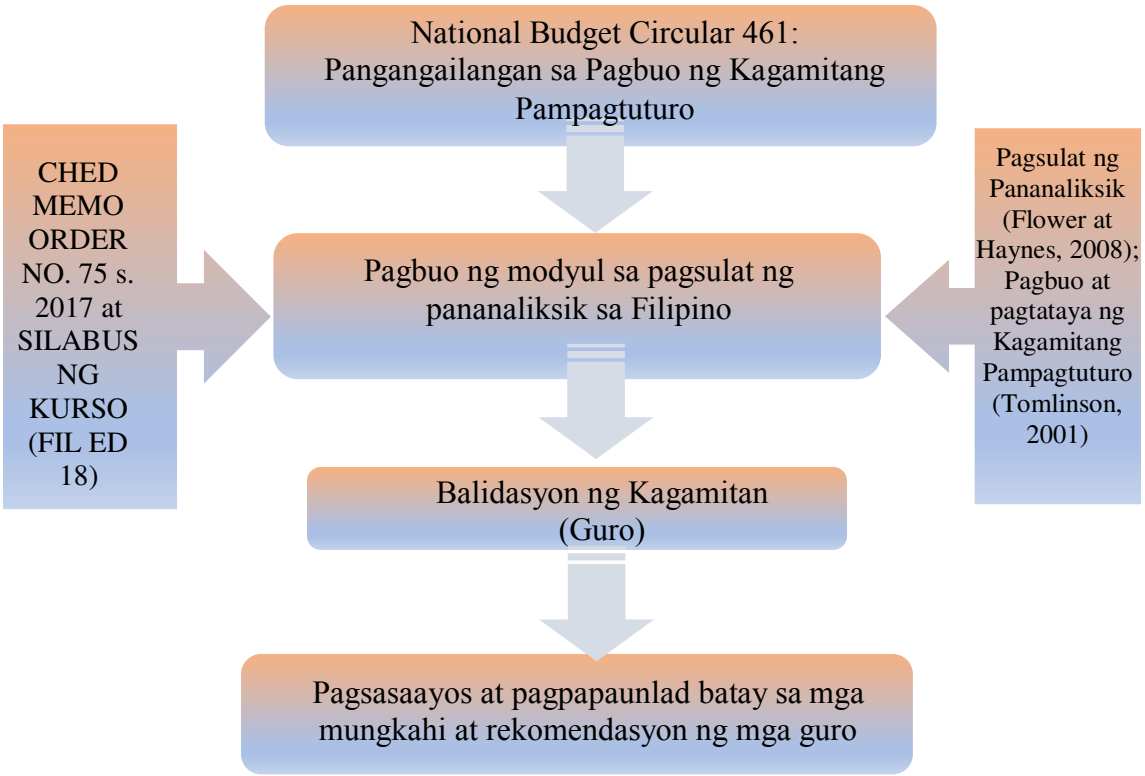
Isinasaad naman sa National Budget Circular No. 461, ang sirkular na ito ay itinadhana upang magpatibay at mag-atas ng mga alituntunin at regulasyon na namamahala sa pagpapatupad ng Revised Compensation and Position Classification Plan para sa mga fakulti sa SUC's o State Universities and Colleges. Batay sa Common Criteria for Evaluation o CCE, upang tumaas ang ranggo ng isang fakulti isa sa kanyang kailangan ay ang pagsulat at paglalathala ng mga libro at iba pang kagamitang pampagtuturo. Hindi mapasusubalian na ang

guro ang pinakamahalagang instrumento ng paaralan. Nakasalalay sa kanila ang pagkatuto ng mga mag-aaral kung kaya't dapat na malawak at mapamaraan ang guro sa pagbabahagi ng kaalaman at kasanayan. Malaki ang gampanin ng guro sa paghahanda ng mga kagamitang pampagtuturo na makatutulong sa pagkatuto ng mga mag-aaral.

Samakatuwid, isang malaking hamon sa bawat guro hamong tinanggap ng mananaliksik - ang makadebelop at makabuo ng kagamitang pampagtuturo na makatutulong sa kanyang mga mag-aaral at tutugon sa kanyang pangangailangan upang mas mapaunlad ang sariling kakayahan at kaalaman sa larangan ng pagtuturo. Naging batayan ng mananaliksik ang kanyang obserbasyon sa mga kaganapan sa loob ng silid-aralan bilang guro na ang mga gawaing ginagamit mula sa mga nakahaing sanggunian ay hindi sapat sa pangangailangan ng mga mag-aaral kasama na rito ang kakulangan ng kagamitang pampagtuturo na nagiging dahilan ng mabagal na proseso ng pagsulat ng pananaliksik. Ito rin ang naging inspirasyon ng mananaliksik sa pagbuo ng kagamitang pampagtuturo na makadaragdag sa mga maaaring gamitin ng mga guro sa pagtuturo ng pananaliksik sa wikang Filipino.

METODOLOHIYA

Balangkas Konseptwal



Ang pigura ay nagpapakita ng konseptwal na balangkas ng pag-aaral. Nagpapakita ng daloy ng pananaliksik na ang pangunahing layunin ay ang pagbuo at pagtataya ng mungkahing modyul para sa pagsulat ng pananaliksik ng mga mag-aaral sa wikang Filipino. Binuo ang mungkahing modyul dahil sa pangangailangan ng mga guro at mag-aaral sa karagdagang kagamitang pampagtuturo sa pagsulat ng pananaliksik sa Filipino. Naging pamantayan ang iba't ibang teorya gaya ng Cognitive Process Theory of Writing at Teorya sa Pagbuo at Pagtataya ng Kagamitang Pampagtuturo, isinaalang-alang din ang silabus ng FIL ED 18 Introduksiyon sa Pananaliksik – Wika at Panitikan. Sa pagtataya ng mungkahing modyul, napili ng mananaliksik ang mga gurong maaaring gumamit ng modyul na nabuo. Ang pagsasaayos at pagpapaunlad pa ng mungkahing modyul ay maisasagawa ng mananaliksik sa pamamagitan ng mga mungkahi at rekomendasyon ng mga gurong naging kalahok sa pagtataya ng kagamitan. May kahalagahan ang mungkahing modyul na nabuo sa pagtuturo ng pagsulat ng pananaliksik. Ito ay ang mga gawaing inihanda na maaaring gamiting pandagdag sa mga estratehiya at gawaing pangklasrum na ginagamit ng guro sa pagtuturo ng pagsulat ng pananaliksik sa Filipino ng mga mag-aaral. Ang kagamitang pampagtuturo ay binuo nang nakabatay sa pagpapaunlad ng kasanayan sa pagsulat ng mga mag-aaral kaya't nagbibigay ito ng sistematikong lawak ng mga kasanayang pauunlarin.

Metodo

Sapagkat ang pag-aaral ay nagnanais na matukoy ang pangangailangan ng mga mag-aaral sa pagsulat ng pananaliksik, minabuti ng mananaliksik na gamitin ang dulog-kwalitatibo pagkat mas angkop ang naturang metodo sa kalikasan ng naturang pananaliksik. Layunin ng kwalitatibong pananaliksik na arukin ang mga katugunan ng bawat kalahok na magmumula sa kanilang mga karanasan (Denzin & Lincoln, 1994). Ninais din ng mananaliksik na malaman, matuklasan at mabigyang-halaga ang kasanayan ng mga mag-aaral sa pagsulat ng pananaliksik sa Filipino. Sa pag-aaral na ito, gumamit ng deskriptib na datos (descriptive data) upang makakuha ng tiyak na detalye at iba't ibang kaalaman mula sa mga kalahok na kinapanayam. Ang pagpili ng *descriptive data* ay napakahalagang pamamaraan para sa pagkuha ng kalidad na mga datos. Ang disenyong ito ang napiling gamitin para sa epektibong pagsasagawa ng pananaliksik. Sapagkat nilayon ng mananaliksik na makapangalap ng mga mahahalagang datos mula sa mga salitang binigkas ng kalahok mula sa *"in-dept interview"* maging sa *"focus group discussion".* Isang uri ng kwalitatibong pamamaraan ang "*in-depth interview"* na ginamit upang malaman kung paano bigyang pakahulugan ng mga tao ang mundo (Alin et al, 2008). Ito rin ay isang pagkakataon upang malinaw na maipakita ang mga pananaw ng mga kalahok sa pinag-uusapang paksa. Ito ay ginamit upang mahikayat ang mga kalahok na ibahagi ang kanilang mga nararamdaman, opinyon, at karanasan. Ang mga kalahok ay kailangang may direktang kinalaman o may kaalaman sa paksa. Imbes na pamamaraang sarbey, gagamitin ng mananaliksik ang *open-ended* na istilo ng panayam/interbyu para hindi malimitahan sa pagbibigay ng saloobin ang mga kalahok sa pag-aaral at masiguro na sarili nilang opinyon ang maibabahagi (Reinharz, 1992). Ang *focus group discussion* o *FGD* ay isang uri ng panayam na may apat (4) hanggang labing anim (16) na kalahok. Nakapokus ang tanong sa paksang ipinaabot sa kanila bago pa man ang *FGD*. Isinailalim ang mga nakuhang impormasyon sa puspusang paglimi at paggalugad nang mabigyan ng kaangkupang kasagutan ang mga tanong na nakapaloob sa pag-aaral na ito.

Bahagi rin ng disenyo ng pag-aaral ang paggawa ng *interview guide questions* para sa *in-depth interview.* Ito ay naglalaman ng iba't ibang mahahalagang tanong kaugnay sa paksang may kinalaman sa pagsulat ng pananaliksik. Ginamit na gabay ng mananaliksik ang talatanungan o *interview guide questions* na binuo upang magsilbing gabay sa pagtatanong sa mga kalahok para sa *in-depth interview* o *IDI.* Bumuo rin ng mga tanong sa pagbabalideyt ng

mga guro sa nabuong alternatibong kagamitan para sa mga gurong kalahok ng *focus-group discussion* o *FGD.*

Para naman sa pagtataya ng nabuong workteks, ginamit ng mananaliksik bilang instrumento ng pagtataya ang University Textbook and Instructional Materials Evaluation Committee o UTIMEC ng Politeknikong Unibersidad ng Pilipinas.

Bukod sa pagtatala ng mananaliksik sa mga katugunan ng mga kalahok sa oras ng panayam ay gagamit din sila ng *audio recorder* para masiguro na hindi mamamanipula ang mga impormasyong ibibigay ng bawat kalahok. Isang sistematikong balangkas ang magiging lunsaran sa paghahanay ng mga impormasyon para masala ang magkakatulad at magkakaibang pahayag.

RESULTA

Lagom ng Natuklasan

Ang pag-aaral ay isang pagtatangkang makabuo ng mungkahing modyul na makatutulong sa pagsulat ng pananaliksik sa Filipino para sa mga mag-aaral na kumukuha ng FIL ED 18 (Introduksyon sa Pananaliksik – Wika at Panitikan) sa antas tersyarya ng Eulogio "Amang" Rodriguez Institute of Science and Technology. Nakatuon ito sa pagtataya ng mungkahing modyul na magsisilbing karagdagang kagamitang pampagtuturo ng mga guro.

Batay sa mga nakalap na impormasyon tungkol sa mga karanasan ng mga mag-aaral sa pagsulat ng pananaliksik sa Filipino, nakabuo ng isang kagamitang pantulong ang mananaliksik, ang modyul sa pagsulat ng pananaliksik sa Filipino. Ito ay kalipunan ng mga paksa, pagsasanay, gawain at pagsubok para sa paglinang ng kasanayan sa pagsulat ng mga mag-aaral sa antas tersyarya. Ang mga gawaing nanakapaloob sa mungkahing modyul ay iniangkop sa kasanayang dapat matamo ng mga mag-aaral sa kursong Introduksyon sa Pananaliksik - Wika at Panitikan. Malaking tulong ito sa mga mag-aaral upang mas mahubog pa ang kanilang kritikal na pag-iisip at kakayahan sa pagsulat ng pananaliksik.

Batay sa mga inihaing mga suliranin at sa pagpoproseso ng mga nakalap na datos ay natuklasan ang mga sumusunod:

1. Labindalawa sa labinlimang mag-aaral na kinapanayam ang nagsabing ang suliraning kinaharap nila sa pagsulat ng pananaliksik ay ang kakulangan ng kagamitang makatutulong sa pagsulat ng pananaliksik. Anim sa labinlimang mag-aaral naman ang nagsabing mismong ang batayang kaalaman sa pagsulat ng pananaliksik ang suliranin na kanilang kinaharap sa pagsulat. Lima sa labinlima naman ang nagsabing nahihirapan silang bumuo ng angkop na paksa at pamagat para sa kanilang pag-aaral. Apat naman ang nagsabing sa pagbuo ng mga tiyak na katanungang sasagutin sa pananaliksik ang sa kanila'y mahirap gawin. Ilan lamang ang nagsabing sila ay may suliranin sa pagbabadyet ng kanilang oras sa pagsulat ng pananaliksik at ang kooperasyon ng bawat miyembro sa pangkat.

2. Mas makabubuti ang mga kolaboratibong gawaing hahamon sa kakayahan ng mga estudyante habang may suporta ang guro, at klase, kaysa paulit-ulit na mga gawaing kaya nang isagawa ng mag-aaral nang nag-iisa. Maliban sa talakayan sa silid-aralan tungkol sa paksang pananaliksik makatutulong din ang mga pangkatang gawain. Habang natututuhan ng mag-aaral ang isang aralin, unti-unti nang inaalis ng guro ang kanyang paggabay sa iba't ibang gawain, kabilang na ang pagsulat ng pananaliksik. Samakatwid, habang nararanasan ng mag-aaral ang proseso ng pagsulat, nagkakaroon naman siya ng malawak na kaalaman tungkol sa paksang kanyang isinusulat. Nagaganap ito sa patuloy niyang obserbasyon sa kanyang guro bilang modelo ng kanyang gawaing pasulat, gayon din sa interaksyon niya sa mga kapwa mag-

aaral. Nangangahulugan lamang na hindi lamang gawaing pang-indibidwal ang pagsulat. Kung kaya napagtanto ng mananaliksik na bumuo ng isang kagamitang pampagtuturo o modyul na magiging gabay ng mga mag-aaral sa pagkatuto sa pagsulat o pagbuo ng pananaliksik. Kung saan ang mga gawain ay nagiging magaan ang dating para sa mag-aaral dahil ito ay inilatag sa isang magaan at simpleng paraaan. Ang lahat ng mga gawaing ito ay tiniyak ng mananaliksik na nakabatay sa CHED Memorandum No. 75 at Silabus ng institusyong pinagtuturuan. Ang mga teoryang pinagbatayan ay nakaayon din sa pangangailangan ng kurso at kakayahan ng mga mag-aaral.

3. Sa ginawang pagtataya bilang proseso sa pagpapatibay ng mungkahing modyul, lumalabas na ito ay inparubahan ng mga tagataya na gamitin bilang sanggunian sa pagtuturo at pagkatuto ng mga mag-aaral na kumukuha ng kursong pananaliksik. Ang mga gawaing inihanda ng mananaliksik ay lumalabas na angkop sa pangangailangan ng institusyon at mag-aaral.

4. Sa kabuuan ng naging rekomendasyon ng mga tagataya, malinaw na binibigyang diin ang pagkakaroon ng rebisyon sa ilang gawain tulad ng sumusunod: a. Gawing mas mapanghamon ang mga gawain kung saan masususbukan ang sipag at tiyaga ng mga mag-aaral sa pagbuo ng pananaliksik. b. Pumili ng mas makabagong paksa na may kaugnayan sa kursong kinukuha ng mga mag-aaral. c. Magdagdag ng mga grapikong pantulong sa pagtalakay ng mga aralin.

TALAKAYAN

Kongklusyon

Matapos na maisagawa ang proseso ng pag-aaral at makapangalap ng mga datos, naisakatuparan ng mananaliksik na matamo ang layunin at suliranin sa pag-aaral. Sa bahaging ito, inilahad ng mananaliksik ang pagsusuri sa mga kaugnay na mga datos na mula sa pananaliksik na ito.

1. Ang mga mag-aaral ay may kani-kanilang suliraning kinaharap sa pagsulat ng papel-pananaliksik. Ang pangunahing suliranin ay ang kakulangan sa mga sanggunian o *references* gaya ng aklat, dyornal, sipi ng mga tesis at disertasyon na may kaugnayan sa wikang Filipino. Ang suliraning ito ay sinang-ayunan ng mga guro at mga mag-aaral.

2. Ang mungkahing modyul bilang sanggunian sa pagkatuto at pagtuturo ay kinakailangang nakabatay sa rekomendasyong ng CHED at silabus ng institusyon. Ang teoryang pagbabatayan ay kinakailangang nakabatay rin sa mga kasanayan na kailangang matutuhan ng mga mag-aaral at bibigyang konsiderasyon din ang antas ng kanilang kakayahan.

3. Sa pagtataya ng mga guro ng alternatibong kagamitan, sila ay sumasang-ayon na ang kagamitan ay makatutulong sa paglinang ng kasanayan sa pagsulat ng pananaliksik sa Filipino. Ito ay umaangkop sa mga kasanayang dapat matamo ng mga mag-aaral sa ikatlong taon sa kursong Introduksyon sa Pananaliksik – Wika at Panitikan.

4. Dahil sa mga naging rekomendasyon ng mga tagataya, napagtanto ng mananaliksik na talagang kinakailangan nang masusing pag-aaral sa pagbuo ng ano mang mungkahing kagamitan. Kinakailangan na ito ay dumaan sa maliming pagtataya upang matiyak na ito nga ay makatutulong upang mas maging kapaki-pakinabang ang mga gawain sa mga mag-aaral sa pagkamit ng kasanayan o pagkatuto.

Sa bahaging ito, iisa-isahin ng mananaliksik ang mga mungkahi mula sa naging kahinatnan ng pag-aaral. Tatalakayin dito ang mga rekomendasyon na maaaring ipatupad ng mga edukasyunal na institusyon, guro, mag-aaral at mga susunod na mananaliksik na magpapatuloy ng pag-aaral na ito:

1. Para sa mga edukasyunal na institusyon, napapanahon na upang bigyang-puwang ang pagkakaroon ng mga programa gaya ng *seminar-workshop* o *training* ang mga guro at mag-aaral upang mapaunlad pa ang kasanayan sa pagsulat ng pananaliksik sa Filipino, gayundin ang kakayahan sa pagdebelop at pagbuo ng kagamitang pampagtuturo. Mainam ding magsagawa ng iba pang mga programa, palihan, pagsasanay at kumperensiya na may kinalaman sa pagsulat ng pananaliksik upang mas mapalalim at mapalawak pa ang kaalaman ng bawat isa.

2. Para sa mga gurong nagtuturo ng pananaliksik o iba pang asignaturang humihingi ng pananaliksik at pamanahong-papel bilang pangwakas na awtput, isang hamon para sa lahat na makalikha ng mga kagamitang panturo na naaayon sa interes at kakayahan ng mga mag-aaral. Bigyang-pansin ang pagkakaroon ng positibong pananaw na matuto at madagdagan ang kaalaman sa pagpapaunld ng kasanayan bilang mga guro. Maaaring gamitin sa pagtuturo ang mungkahing modyul na nabuo bilang karagdagang teknik, pamamaraan, at kagamitang panturo upang matugunan ang pangangailangan ng mga mag-aaral. Mahalaga ring makapagrekomenda ng mga pinakamahuhusay na mga aklat sa silid-aklatan upang magkaroon ng sanggunian ang mag-aaral sa pagsulat ng pananaliksik.

3. Para sa mga mag-aaral, patuloy na sumubok sumulat ng pananaliksik sa kabila ng mga suliraning kinakaharap sa pagsulat nito, gamitin ito sa kapaki-pakinabang na paraan upang mapagyaman ang kaalaman, malinang ang kasanayan at mapaunlad ang kakayahan.

4. Para sa mga susunod na mananaliksik, hinihikayat ng mananaliksik na gamitin ang nagawang alternatibong kagamitan sa paglinang ng kasanayan sa pagsulat ng pananaliksik ng mga mag-aaral. Maaaring ipagpatuloy o palawakin pa ang pag-aaral na iton tungo sa pagtuklas ng mas marami o higit pang mahahalagang datos o impormasyong maaaring makatulong sa paglutas ng mga suliraning kaugnay ng pananaliksik.

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THE SOCIO-ENTERPRISE IMPACT OF COOPERATIVE IN BARANGAY 635 ZONE 64 STA MESA MANILA

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INTRODUCTION

The development of credit cooperatives in the Philippines is interesting. Many of them started with a handful of members who pooled their meagre resources to address their financial problems. Some of them even started as informal associations (i.e., damayan, paluwagan, etc.) with a simple objective of collectively looking for means to ease the financial difficulties of individual members.

For more than three decades, Philippines credit cooperative has grown in financial resources and membership. They help thousands of members build up their savings and access low cost credit for diverse needs such as medical and educational expenses. The credit cooperative are community-based and grassroots financial institutions which operates in both rural and urban areas, providing those communities with a variety of financial services not otherwise available from the traditional lending institutions.

The College of Business researchers who are also part of the college extension reach out the constituents of barangay 635 Zone 64. Barangay started its cooperative early in 2014. Its barangay officials and so barangay constituents are active in their participation in all the activities of their cooperative. What is the impact of credit cooperative in the lives of members and other constituents who may avail the services of the credit cooperative? The researchers would seek to find.

MATERIALS AND METHODS

To answer systematically, the problems posed in this inquiry, the researcher employed the descriptive method of research.

Sevilla (2001), defined descriptive method as the collection of data in order to the hypothesis to answer questionnaire. Concerning the current statistic of the subject under the study. Documentary analysis will be likewise used to process the data gathered and arrived information relative to the respondents, and five-point questionnaire, checklist to determine the impact of community credit cooperative of barangay 635, Zone 64 Nagtahan, Sampaloc, Manila.

RESULTS AND DISCUSSIONS

Sub-problem No.1: What is the demographic profile of the respondents in terms of:

1.1 Age

Table 1 represents the profile of the respondents in terms of age.

Table 1

Demographic Profile of the Respondents in Terms of Age

Age	Frequency	Percentage	Ranking
21-25 years old	4	8%	3rd
26-30 years old	11	22%	2nd
31 and above	35	70%	1st
TOTAL	**50**	**100%**	

The table shows the frequency and percentage of the respondent according to age, where in 31 years old and above has the highest number of the respondents of 35 or 70% next is 26 to 30 years old with 11 respondents or 22% while 21 to 25 years old with 4 respondents or 8%.

1.2 Gender

Table 2 represents the profile of the respondents in terms of gender.

Table 2

Demographic Profile of the Respondents in Terms of Gender

GENDER	FREQUENCY	PERCENTAGE	RANKING
Male	21	42%	2nd
Female	29	58%	1st
TOTAL	**50**	**100%**	

The table shows the frequency and percentage of the respondents according to gender. Female has 29 respondents or 58% while male has 21 respondents or 42%.

1.3 Civil Status

Table 3 represents the profile of the respondents in terms of civil status.

Table 3

Demographic Profile of the Respondents in Terms of Civil Status

CIVIL STATUS	FREQUENCY	PERCENTAGE	RANKING
Single	29	58%	1st
Married	19	38%	2nd
Separated	20	4%	3rd
Widow/Widower	0	0	0
TOTAL	**50**	**100%**	

The table shows the frequency and percentage of the respondents according to civil status. Single category has the highest respondents with 29 or l58% next is “Married” with 19 respondents or 38% while separated category has 2 respondents or 4%.

1.4 Monthly Income

Table for represents the profile of the respondents in terms of monthly income.

Table 4

Demographic Profile of the Respondents in Terms of Monthly Income

MONTHLY INCOME	FREQUENCY	PERCENTAGE	RANKING
30,000 and above	0	0%	
25,000-29,000	0	0%	
20,000-24,000	1	2%	4th
15,000-19,000	11	22%	2nd
10,000-14,000	30	60%	1st
Below	8	16%	3rd
TOTAL	**50**	**100%**	

The table shows the frequency and percentage of the respondents according to Monthly income. 10,000 to 14,000 has highest respondents with 30 or 60% next is 15,000 to 19,000 with 11 respondents or 22% while the below average has 8 respondents or 16% nets is 20,000 to 24,000 has 1 respondent or 2%.

1.5 Job Category

Table represents the profile of the respondents in terms of job category.

Table 5

Demographic Profile of the Respondents in Terms of Job Category

JOB CATEGORY	FREQUENCY	PERCENTAGE	RANKING
Technical	20	40%	2nd
Non-Technical	30	60%	1st
TOTAL	**50**	**100%**	

The table shows the frequency and percentage of the respondents according to their job category, where in the non-technical category has the highest number of respondents of 30 or 60% while technical category has 20 respondents or 40%.

Sub-problem No.2: How important is the credit cooperative in terms of:

2.1 Social Component

Table 6 represents the important of Credit Cooperative in terms of Social Component.

Table 6

Important of Credit Cooperative in Terms of Social Component

Social Component	Weighted Mean	Description	Ranking
2.1.1 Credit Cooperative is important because it promotes peace, provision of human needs, social justice and equality.	**4.04**	Very Important	1st
2.1.2 It is important because they exist not just for the benefits of members but to serve, strengthen and sustain local communities.	**3.86**	Very Important	3rd
2.1.3 It is important because it enables people to claim their rights and have greater control over the decision-making, which affects their lives.	**3.72**	Very Important	4th
2.1.4 It is important because its capacity is dependent upon its social capacity to be able to solve problems and optimize multiple goals.	**3.9**	Very Important	2nd
TOTAL	**3.88**	**Very Important**	

The table reveals that Credit Cooperative is important because it promotes peace, provision of human needs, social justice and equality as 1st rank. Having a total of (4.04) weighted mean, followed by Credit Cooperative is important because its capacity is dependent upon its social capacity to be able to solve the problems and optimized multiple goals with the total of (3.9) weighted mean while the lowest rank is Credit Cooperative is important it enables people to claim their rights and have greater control over the decision-making, which affects their lives with a total of (3.72).

According to Nwaenyi, he discussed that cooperative society is an association of people on the basis of willingness and interest to pool their resources together in order to better their socio-economic disposition in any human society. This is informed by the very belief that people with small means of income can improve their socio-economic and level of their standard of living by putting their efforts together.

2.2 Enterprise Component

Table 7 represents the important of Credit Cooperative in terms of enterprise component.

Table 7

Important of Credit Cooperative in Terms of Enterprise Component

Enterprise Component	Weighted mean	Description	Ranking
2.2.1 Credit Cooperative is important because it is an instrument in creating and retaining jobs.	3.52	Very Important	4th
2.2.2 It is important because it is an effective strategy for creating or expanding locally based businesses.	4.06	Very Important	1st
2.2.3 It is important because it is promotes thrift and the habit of regular savings among the members.	3.86	Very Important	3rd
2.2.4 It is important because it is specially seen as significant tools for the mobilization of resources for income generation.	4.06	Very Important	1st
TOTAL WEIGHTED MEAN	**3.88**	**Very Important**	

Table 7 reveals that Credit Cooperative is important because it is an effective strategy for creating or expanding locally based businesses and it is specially seen as significant tools for the mobilization of resources for income generation as 1st rank. Having a total of (4.06) weighted mean, followed by it is important because it promotes thrift and the habit of regular saving among the members with the total of (3.86) weighted mean while the lowest rank is credit cooperative is important because it is an instrument in creating and retaining jobs with a total of (3.52).

The overall weighted mean is (3.88) interpreted as “Very important indicates that the Credit Cooperative is very important.

According to Medina, Cooperative is a firm owned by a group of people who have a common objective and who collectively bear the risks of enterprise of share of profits. Cooperatives are formed to make their members individually profitable or to save money.

Sub-problem no. 3: How effective is the credit cooperative in terms of:

3.1 Lifestyle

Table 8 represents the effectiveness of credit cooperative in terms of lifestyle.

Table 8

Effectiveness of Credit Cooperative in Barangay 635 in Terms of Lifestyle

LIFESTYLE	Weighted mean	Description	Ranking
3.1.1 Credit cooperative stand as our source of income	**3.98**	Very effective	2nd
3.1.2 Credit cooperative helps us to build a business.	**4.0**	Very Effective	1st
3.1.3 Credit cooperative provides us job opportunities	**3.66**	Very effective	3rd
3.1.4 Credit cooperative gives us self-satisfaction	**3.38**	Very effective	4th
TOTAL	**3.76**	**Very effective**	

The table reveals that credit cooperative helps to build a business as 1st rank. Having a total of (4.0) weighted mean, followed by credit cooperative stand as our source of income with a total of (3.98) weighted mean while the 4th rank is credit cooperative gives us self-satisfaction with a total of (3.98).

According to Ahimbisibwe, cooperative is society whose business is to provide financial services to its members. As such it is a cooperative which operates in the financial system. He also added that it is a legal entity in which individual save their money and can get loans in order to invest in various activities.

3.2 Business

Table 9 represents the effectiveness of credit cooperative in terms of business.

Table 9

Effectiveness of Credit Cooperative in Barangay 635 in Terms of Business

Business	Weighted mean	Description	Ranking
3.2.1 Credit cooperative generates fund for agricultural/poultry business.	**3.64**	Very effective	2nd
3.2.2 Credit cooperative gives fund for transportation businesses.	**3.58**	Very effective	4th
3.2.3 Credit cooperative generates fund for communication business such as internet or online/computer shops.	**3.62**	Very effective	3rd
3.2.4 Credit Cooperative helps us to build and to generate funds for small enterprise such as sari-sari store and groceries.	**3.74**	Very effective	1st
TOTAL	**3.645**	**Very effective**	

Table 9 reveals that credit cooperative helps us to build and to generate funds for small enterprise such as sari-sari store and groceries as 1st rank. Having a total of (3.74) weighted mean, followed by credit cooperative generates fund for agricultural/poultry business with a total of (3.64) weighted mean while the 4th rank is credit cooperative gives fund for transportation businesses with a total of (3.58).

With regards to credit cooperative, it can help generate funds which members may borrow for either providential or productive purposes. This cooperative also promotes thrift and the habit of regular savings among the members and teaches them the management and wise use of money. Through Cooperatives, education, education, promotion of savings, family budgeting, financing counseling and operating a small business may be stressed. (Economics)

3.3 Education

Table 10 represents the effectiveness of credit cooperative in terms of education.

Table 10
Effectiveness of credit cooperative in barangay 635 in terms of education

3.3 Education- The credit cooperative gives sources of funds for the children of its members:	Weighted mean	Description	Ranking
3.3.1 Tuition Fees	**3.88**	Very Effective	1st
3.3.2 Emergency/Contingency Funds	**3.84**	Very effective	2nd
3.3.3 Allowances	**3.62**	Very effective	3rd
3.3.4 Project/Educational tour	**3.6**	Very effective	4th
TOTAL	**3.735**	**Very Effective**	

Table 10 reveals that credit cooperative gives sources of funds for the children of its members for the tuition fees as 1st rank. Having a total of (3.88) weighted mean, followed by for the emergency/contingency funds with a total of (3.84) weighted mean while the 4th rank is for project/ educational tour with a total of (3.84) weighted mean while the 4th rank is for project/educational tour with a total of (3.6).

According to Mrema, he found a significant supportive effect of cooperative loans on employment, increase in salaries and established of surviving businesses. The cooperative also helps members and their families to be lift out of poverty because members were able to send their children to school.

3.4 Healthcare

Table 11 represents the effectiveness of credit cooperative in terms of healthcare.

Table 11
Effectiveness of Credit Cooperative in Barangay 635 in Terms of Healthcare

HEALTHCARE	Weighted mean	Description	Ranking
3.4.1 Credit cooperative generates fund for medical/hospitalization expenses	**3.92**	Very effective	1st
3.4.2 Through Credit Cooperative, we find sources of fund for the dental expenses.	**3.72**	Very effective	4th
3.4.3 Credit cooperative gives fund for emergency purposes.	**3.82**	Very Effective	2nd
3.4.4 Credit cooperative gives fund for burial purposes.	**3.78**	Very Effective	3rd
TOTAL	**3.81**	Very Effective	
Total Weighted Mean	**3.736**	**Very Effective**	

Table 11 reveals that credit cooperative generates fund for medical/hospitalization expenses as 1st rank. Having a total of (3.92) weighted mean, followed by credit cooperative gives fund for emergency purposes with a total of (3.82) weighted mean, while the 4th rank is through credit cooperative, we find sources of fund for the dental expenses with a total of (3.72).

The overall weighted mean is (3.766) interpreted as "very effective" indicates that the community credit cooperative is very effective to the lives of its members.

According to Kusel, cooperative's capacity is dependent upon its social capacity to be able to solve problems and optimize multiple goals. These qualities are difficult to quantify but can be evidenced through access to expertise with in the community and demonstrated or promised willingness among cooperative members to support the effort and is evidenced even further by equitable distribution of power, health and opportunity as well as generally improved standards of living among all members of the cooperative.

Sub-problem no. 4: is there a significant relationship in the assessment of the respondents as to the effectiveness of credit cooperative and perceived importance?

Table 12

Significant Relationship in the Assessment of the Respondents as to the Effectiveness of Credit Cooperative and Perceived Importance

SAMPLE	Mean	Variance	Significance Level (at 0.05)	Z-Value
1	**3.8775**	0.0012	1.96	3.68
2	**3.736**	0.00352		

As shown in Table 12, two (2) items have obtained the weighted mean of 3.8775 and 3.736 which are higher on the critical value of 1.96 at 0.05 level of significance and were interpreted as significant rejecting the hypothesis.

According to Narayan and Petesch, cooperatives are in many countries playing significant social and economic parts in national economics, thus ensuring not only personal development a reality, but contributing to the well-being of the entire population at the National level. Cooperative have significantly contributed to economic growth throughout the world.

Sub-problem no.5: what are the problems encountered and recommendation in the implementation of credit cooperative?

5.1 Problems encountered in the implementation of the credit cooperative.

Table 13 shows the problem encountered in the implementation of the credit cooperative.

Table 13

Problems Encountered in the Implementation of Credit Cooperative

Problems Encountered by the Credit Cooperative	Weighted mean	Description	Ranking
4.1.1 Inadequate of resources	**3.7**	Agree	4th
4.1.2 Delayed of non-payment of contribution	**3.64**	Agree	5th
4.1.3 Inactive and uncooperative members	**3.78**	Agree	3rd
4.1.4 Poor attendance of members in meetings and incompetent officers	**3.82**	Agree	1st
4.1.5 Lack of outside support	**3.8**	Agree	2nd
TOTAL	**3.748**	**Agree**	

The Table reveals that poor attendance of members in meetings and incompetent officers as 1st rank. Having a total of (3.82) weighted mean, followed by lack of outside support with a total of (3.8) average weighted mean while the 4th rank is delayed or non-payment of contribution with a total of (3.64).

The overall weighted mean is (3.748) interpreted as "agree" indicates that the problems presented by the researchers agree with them.

According to Ilie, cooperative like many other types of enterprise, cooperatives face the challenge of finding the most efficient means to distribute insufficient resources. But contrasting most other enterprises, cooperatives also needs to seek a sustainable stability between members needs and economic challenges. The paper discusses issues related with the contributions of cooperative enterprises to poverty reduction, employment generation and social integration.

Suggestions and Recommendation to improve the implementation of the credit cooperative:

1. Bring down the barriers between the members and the management.
2. Transparency of the management of the credit cooperative to its members.
3. Let all residents of the said barangay be aware about the credit cooperative.
4. Offer a seminar/distribute module on how to earn money in an effective way.
5. Being able to reach out to other groups in order to gain additional support.

Table 14

Summary of the Socio-enterprise Impact of the Community Credit Cooperative in Barangay 635, Sta. Mesa, Manila

Statement	Weighted Mean	Description
1. Importance of credit cooperative	**3.88**	Very Important
2. Effectiveness of credit cooperative	**3.74**	Very Effective
3. Problems encountered in the implementation of credit cooperative.	**3.74**	Agree

The table 14 shows that credit cooperative is very important having an average weighted mean of 3.88. It also shows that credit cooperative is very effective having an average weighted mean of 3.74. The problems presented by the researchers have received a total average weighted mean of 3.75 which means that the respondents agreed with them.

CONCLUSIONS

The major conclusions of study where:

1. The assessments of respondents were truly product of their own personal analysis but forwarded it in a professional manner without totally dragging the variables of the aforementioned indicators into very low ratings.

2. There is a strong indication that the officers have similar analysis with the members' response on the implementation of the community credit cooperative.

3. The assessments of respondents based on their honest perceptions as indicated in the survey has manifested greatly to the sense that there is a significant relationship between the perceived importance and effectiveness of the community credit cooperative, therefore, the significance reject the hypothesis.

4. From the problems encountered after the interpretation of the data gathered, the researchers found out that there problems that are currently presented and that there must be an action made towards these. (5) the entire assessment, made by the respondents, suggests that there is still a need of improvements to better the services of the credit cooperative.

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PRIMING THE RESEARCH CULTURE WITH ORGANIZATIONAL EFFECTIVENESS AND RESEARCH ENGAGEMENT ACTIVITY

Eric C. Mendoza

INTRODUCTION

Change abounds all around us and we can see how it impacts on everything that we do. And certainly, what is common among these modern relics and frolics of inventions and innovations is that they are products of research. Indeed, conducting relevant and responsive research has become the byword of the 21st century. In the educational sector, the development, nurturance, and sustainability of an institutional research culture is itself a challenge that necessitates the active engagement of the academic community and students in the various facets of research engagement. It does not only require an attitude of thinking-and-doing research but demands a work ethic of persistence, patience, and walking-the-extra mile.

Numerous research gurus have recognized the role of organizational effectiveness in priming the institutional research culture. A vital component of institutional transformation is the development and nurturance of a research culture (Hsia-San Shu, 2006; Gonzales, 2006; Abdul Razak, D., 2006). To enable the active engagement of the academic community in establishing the research culture, the institution must create research infrastructure (Sison, 2006; Tansio, & Marquez, 2006) and build niche research areas that improve the institution's standing in the particular field. Thus, building a community of researchers is shaped by both internal and external factors.

In pursuit of the National Higher Education Research Agenda 2: 2009-2018 and the National Science and Technology Plan 2002-2020, this institution's Research Agenda focused on five thrusts: (a) Research in science and technology for institutional and national development; (b) Research to promote productivity and competitiveness of this higher educational institution; (c) Research to enhance capability building and management in the Institute; (d) Research to improve instruction in the various disciplines; (e) Research to promote institutional image [6]. Guided by these institutional research agenda, various colleges cascades their own research thrusts and priorities in order to align their research efforts and activities. Thus, there is synergy of purposes and utilization of resources.

Likewise, to give focus on the research initiatives which impact towards attaining a niche in the research milieu (Mendoza, 2017), the university is mandated to foster a research ecosystem which supports this direction and engages both faculty and students to pursue a research culture through policies, programs, projects and activities that support its nurturance. This is done by providing or participating in appropriate opportunities to showcase both faculty and students' research outputs thru internal and external research competitions and exhibits sponsored by government and non-government agencies. Likewise, faculty and student paper presentations, publications, and participation in research capacity building conferences/workshops can be prioritized to enhance the research competencies and skills of faculty and students.

The study examined the extent of implementation of the research engagement activity and its relationship with organizational effectiveness in gaining a foothold in priming the institutional research culture. The specific focus of the evaluation pointed on the student-participants' perceptions on the research engagement activity in promoting research culture, stakeholder engagement, technical requirements and expertise, and administrative and financial support towards identifying policy enhancement measures to address performativity, intensification, and income generation that would redound to sustainable support in undertaking the research engagement activity and nurturance of research culture.

METHODOLOGY

A survey was conducted utilizing a researcher-made questionnaire to 245 respondents purposively selected from a total of 634 undergraduate students who participated in the annual research engagement activity. Content validation of the questionnaire was done by research instructors and coordinators. Dry run was conducted to determine the reliability of the items. The study was conducted in a state college in Manila, Philippines. Appropriate permission to administer the questionnaire was sought from the school authorities.

The questionnaire consisted of statements that determine the extent of organizational effectiveness and implementation of the research engagement activity to promote the institutional research culture with responses interpreted as follows: 4.20-5.00 (very great extent); 3.40-4.19 (great extent); 2.60-3.39 (moderate extent); 1.80-2.59 (least extent); 1.00-1.79 (none).

RESULTS

Table 1 shows that the research engagement activity promotes to a great extent the research culture since it supports innovation and creativity of the students as well as entries are in line with their field of discipline. However, due to the least extent of awareness of the students about the Institute Research Agenda, there is doubt whether their research entries are line with this research agenda. Nonetheless, this research engagement activity can imbibe in the students a realization of a research culture which is supported by their actual experience as well as generating possible opportunities to participate or compete with peers (Spronken-Smith, Mirosa & Darrou, 2013; Hall, 2015).

Table 1

Promoting Research Culture

Criteria	Mean	Verbal Description	Rank
1. The activity supports innovation and creativity of students in the school.	4.23	Very great extent	2
2. Students are aware of the Institute Research Agenda.	2.26	Least extent	5
3. The activity is held regularly.	4.50	Very great extent	1
4. Student entries compete in research competitions.	3.37	Moderate extent	4
5. Students' entries are in line with their field of discipline.	4.20	Very great extent	2
Overall Mean	**3.71**	**Great extent**	

Table 2 presents the moderate extent in the participation of students in this research engagement activity as well as the assistance of experts from the Department of Science and Technology-National Capital Region who provided expertise as external judges which lend to the prestige of the competition. However, as currently practiced, the research engagement activity is not participated by other higher educational institutions. Likewise, projects undertaken were not collaborative projects from other disciplines and prizes and incentives for winners are not sourced from external agencies. These vital aspects impact on developing the research preparedness of students which is influenced by both internal and external factors (Shaw, Holbrook & Bourke, 2013; Manathunga, Lant & Mellick, 2007).

Table 2
Stakeholder Engagement

Criteria	Mean	Verbal Description	Rank
1. Students participate actively in the annual research activity.	4.74	Very great extent	1
2. External judges are invited to evaluate the entries.	4.30	Very great extent	2
3. Other schools participate in the innovation contest.	1.56	None	5
4. Students undertake collaborative projects from other disciplines	2.05	Least extent	3
5. External agencies provide prizes and incentives.	1.97	Least extent	4
Overall Mean	**2.92**	**Moderate extent**	

As shown in Table 3, the entries in the innovation contest are outputs of students' thesis projects. There is a need for technical support such as patent search, intellectual property protection, and a standard research report writing. Generally, students have inadequate awareness about existence and access to free online patent databases or the institutional patent services (Omar, Haji, & Manyerere, 2019; Sulzer & Rose, 2009). Hence, it is prime importance that the university provides opportunities such as small-scale projects (Tweed & Boast, 2011) and adopts measures to increase students' awareness and empowering them with patent literature searching skills, management and promotion of intellectual property rights, technology commercialization programs and processes (Saha, 2015; Payumo et al., 2012).

Table 3
Technical Requirements and Expertise

Criteria	Mean	Verbal Description	Rank
1. Entries come from students' thesis projects.	4.05	Great extent	1
2. Technical entries in the annual research activity undergo patent search.	1.90	Least extent	5
3. Students are familiar with the Innovation Technology and Support Office (ITSO).	2.26	Least extent	3
4. Students are assisted by ITSO for intellectual property protection.	2.05	Least extent	4
5. Students are familiar with standard institutional form and style in research report writing.	2.43	Least extent	2
Overall Mean	**2.54**	**Least extent**	

Table 4 confirms the strong support for funds and requisite resources for holding the annual contest and participating in external competitions from the school administration. However, there are certain areas that needed more attention such as commercialization of winning entries, permanent exhibit area, and higher prizes. This aligns with the impact of funding and school governance has on organizational effectiveness (Caillier, J.G, 2011; Hofman, Adriaan Hofman, & Guldemond, 2002).

Table 4

Administrative and Financial Support

Criteria	Mean	Verbal Description	Rank
1. The school provides funds and resources for the activity.	4.47	Very great extent	1
2. Winning entries are given support for participation in external competitions or exhibitions.	3.70	Great extent	2
3. There is support for commercialization of winning entries.	1.25	None	5
4. There is a permanent exhibit area for winning entries.	1.90	Least extent	4
5. Prizes are adequate and competitive.	1.97	Least extent	3
Overall Mean	**2.66**		

In Table 5, it is underscored that the research engagement activity is able to promote the institutional research culture since there is strong administrative and financial support for its undertaking. Stakeholders have moderate engagement with the research engagement activity while technical requirements and expertise is least supported. As a whole, the annual holding of the institutional research innovation and invention contest and exhibit has a moderate impact in priming the research culture of the Institute. This serves as an avenue to enhance the universities' knowledge creation, knowledge circulation, and knowledge transfer to the industry or the government. (Hasan, Machado, Tsukamoto, & Umemoto, 2006; Anderse, & Rossi, 2011).

Table 5

Summary of the Implementation of the Research Engagement Activity

Criteria	Mean	Verbal Description	Rank
1. Promoting research culture	3.71	Great extent	1
2. Stakeholder engagement	2.92	Moderate extent	3
3. Technical requirements and expertise	2.54	Least extent	4
4. Administrative and financial support	3.75	Great extent	2
Overall Assessment	**3.28**	**Moderate extent**	

Table 6 indicates the mean levels of the extent of organizational effectiveness in the Institute. There is agreement among respondents on the very great of extent of organizational effectiveness in terms of leadership and governance and skills and competencies which emphasize high impact engagement and development of people as well as building leadership capacity. On the other hand, there is agreement among the respondents on the great extent of organizational effectiveness of strategy direction, system, structure, and process which focus on building skills for innovation and flexibility, accountability, performance-based work environment, aligning and executing strategies, use of technical skills, resiliency to change, innovative thinking and supportive organizational systems and structure. There was moderate extent of organizational effectiveness in culture and change, innovation, performance measures and rewards, environmental sustainability and responsibility and communication and

teamwork. Efficiency of utilization of resources and meeting contingencies has the least extent of organizational effectiveness which can be attributed to workplace and productivity culture, commercialization of innovations, data-based monitoring of operations, risk assessment and management relative to internal and external resources and contingencies. This manifests convergence with the influence of external and internal factors within the organization's hierarchy (Smart, Kuh, Tierney, 2016; Hofman, Adriaan Hofman, & Guldemond, 2002; Berger, 2002) in attaining and improving organizational innovation and institutional effectiveness (Glisson, 2015). In general, there is a felt organizational effectiveness which impacts on institutional activities that effect nurturance of a research culture.

Table 6

Extent of Organizational Effectiveness

Criteria	Mean	Verbal Description	Rank
Strategy Direction	**3.95**	**Great Extent**	**3.5**
-Align and execute strategies in a way that meets goals and is consistent with core values.	3.99	Great Extent	
-Focus people and organizations on identifying and meeting stakeholder expectations.	3.91	Great Extent	
Leadership and Governance	**4.39**	**Very Great Extent**	**1**
-Engage people to achieve objectives of the organization.	4.47	Very Great Extent	
-Build capacity for leadership for now and the future	4.30	Very Great Extent	
Culture and Change	**3.21**	Moderate Extent	7
-Enhance workplace productivity and performance culture.	2.59	Least Extent	
-Strengthen organization's culture of collaboration, resiliency, and adaptation to change	3.83	Great Extent	
Innovation	**3.13**	**Moderate Extent**	**8**
-Encourage and nurture innovation in thinking and behaviors.	3.81	Great Extent	
-Turn innovations and promising ideas into business ventures.	2.44	Least Extent	
System, structure, processes	**3.95**	**Great Extent**	**3.5**
-Build supportive organizational systems and structures in the workplace.	3.99	Great Extent	
-Share essential technical knowledge across organizations and functions.	3.91	Great Extent	
Skills and competencies	**4.21**	**Very Great Extent**	**2**
-Strive for high-impact development of people.	4.24	Very Great Extent	
-Build skills for innovation and flexibility in the workforce	4.18	Great Extent	

Performance measures and rewards	**3.25**	**Moderate Extent**	**6**
-Develop productivity and performance-based work environments	4.05	Great Extent	
-Collect and use data-based monitoring of operation and strategy	2.44	Least Extent	
Environment sustainability and responsibility	**2.95**	**Moderate Extent**	**9**
-Assess organization's risks and its impact on the environment	1.90	Least Extent	
-Ensure accountability for professional ethics among all personnel	3.99	Great Extent	
Efficiency	**2.57**	**Least Extent**	**10**
-Maximize internal and external resources.	2.58	Least Extent	
-Meet internal and external contingencies.	2.55	Least Extent	
Communication and Teamwork	**3.38**	**Moderate Extent**	**5**
Use open communication channels on all levels of operation.	3.40	Moderate Extent	
-Allows group work and partnership in project development.	3.35	Moderate Extent	
Overall assessment	**3.50**	**Great Extent**	

Based on Table 7, the computed r of 0.348 and a coefficient of determination of 0.211 established a positive, though weak, relationship between the organizational effectiveness and the implementation of the research engagement activity. The p-value of .132697 indicates that the result is not significant at p<.5; hence, this fails to reject the null hypothesis. It can be inferred that the research engagement activity of students provides a positive venue for the nurturance of the university's research culture as well as it fosters the pursuit of research excellence. However, this calls for a greater challenge on the organization to provide proactive supportive role to assure the research culture's sustainability and effectiveness.

Table 7

Correlation Between Organizational Effectiveness and the Research Engagement Activity

Variables	Computed r	p-value	Decision on H_o
Organizational Effectiveness and Annual Research Activity	0.348	.132697	Fail to reject H_o

Table 8 presents the different policy enhancement measures that are proposed to catapult the research culture which has already been laid down by the highly anticipated annual research engagement activity that showcases the students' research outputs from various disciplines. It is a fertile source of entries in various regional and national competitions and exhibits. As an institutional activity, it has gain foothold in promoting research culture, encouraging stakeholder engagement, expanding technical requirements and expertise needed, and sustaining administrative and financial support. As a vehicle for nurturing research excellence, greater research involvement such as this engagement activity and interdisciplinary research provides access to research experience and positive experiences of the research culture (Spronken-Smith, Mirosa, & Darrou, 2014; Wayment & Dickson, 2008).

Table 8

Policy Enhancement Measures

Concern	Policy Enhancement
A. Promoting research culture	1. Wider dissemination of institutional and college research agenda 2. Regular review of the institutional and college research agenda
B. Stakeholder engagement	1. Encourage collaborative projects or interdisciplinary research 2. Increase contest prizes and incentives from internal funds or external agencies 3. Expand the innovation contest as regional or national competition 4. Support participation in external research competitions and exhibits
C. Technical requirements and expertise	1. Information drive on intellectual property protection and ITSO services 2. Require patent search for all technical projects 3. Establish Statistical Center for statistical analysis of faculty, students, and other interested parties 4. Orient stakeholders on the standard research report format
D. Administrative and financial support	1. Provide exhibit area for award winning entries 2. Promote and support commercialization of winning entries 3. Establish a Research and Production Center 4. Maximize available lot for research development and production

DISCUSSION

Amidst the university's trifocal functions of instruction, research, and extension, research engagement activities are primordial opportunities for students to highlight the applicability of their academic learning. Thus this research ecosystem which involves implementing systematic and programmatic changes contributes to the importance of organizational culture to school improvement and school effectiveness as well as the benefit from a supportive environment on educational changes and the implementation of technology-enhanced innovation (Wayment & Dickson, 2008; Cheng, 1993; Zhu, 2015). The research culture is promoted by the active engagement of school stakeholders. Through increase awareness and experience of research by learning research skills and practical applications of theory (Spronken-Smith, Mirosa & Darrou, 2014), the research program must emphasize the actual doing research and providing resources for funding (Abernathy, K., Abernathy, Z., Costner, Rusinko, & Westover, 2017) and mechanisms for dissemination of outputs (applied/action, basic and strategic research (Holligan, Wilson, & Humes, 2011; Hall, 2015) that enhances the motivation for research and priming a research culture. Furthermore, increasing the students' awareness and their desire to engage in research is enhanced by the

encouragement and support from the academic community in their participation in external research activities as well as an effective and efficient centralized research development and management infrastructure (Spronken-Smith, 2014; Bellinger, Bullen, & Ford, 2014; Shaw, Holbrook, & Bourke, 2013; Manathunga, Lant, & Mellick, 2007; Shamai, & Kfir, 2002). Eventually, organizational effectiveness and opportunities for research engagement do impact on priming the institutional research culture.

CONCLUSIONS

This study asserts that organizational effectiveness and providing a research engagement activity contribute to the development, nurturance, and sustainability of a research culture by its motivational impact on energizing the creative and innovative talents of the students.

As an effective mechanism in the research ecosystem, specific measures are identified for policy enhancement in promoting research culture, stakeholder engagement, technical requirements and expertise and administrative and financial support to address greater performativity, intensification, and income generation that would redound to sustainable support for the institutional research culture.

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EFFECT OF DIFFERENT COMPOSTING MEDIA ON URBAN BIODEGRADABLE SOLID WASTES HOUSEHOLD LEVEL DECOMPOSITION

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INTRODUCTION

Solid Waste Management (SWM) is an environmental issue that requires serious attention from the government and the community populace as well. In developing countries like the Philippines, the pursuit for economic growth has resulted in the use of products and generation of wastes that contribute to environmental degradation.

The rapid growth in population has also made waste management a major environmental challenge for the country. The Ecological Solid Waste Management Act of 2000 (Republic Act 9003) entails systematic administration of activities which provide for segregation at source, segregated transportation, storage, transfer, processing, treatment, and disposal of solid waste and all other waste management activities which do not harm the environment´. In the country, the local government units (LGUs) hold the primary responsibility for the effective and efficient solid waste management. Despite this law, however, poor solid waste management in the Philippines is still prevalent since open and controlled dumps are being used in the country. This poses great threats on the country's environment and public health that include: a) alteration of physical and chemical properties of soil due to percolation of landfill gases like Carbon Dioxide (CO_2) and Methane (CH_4) and leachates from unsanitary landfills and open dumps; b) objectionable odor; and c) soil and groundwater pollution. But the gravest problem now in the country is the scarcity of new landfill sites for the growing number of garbage generated. Many landfills in the Philippines are already filled up to its capacity and forced to close.

Taking the above considerations, the household is the major source of solid waste (specifically the biodegradable volume) and therefore has a great responsibility on this environmental issue. The household itself can do composting on its biodegradable wastes. Likewise, if there are interested persons to collect regularly these biodegradable materials in the community level and prepare such for composting, the resulting product would be a source of income. As of today, the only method of every household to dispose their biodegradable wastes is to wait for the garbage truck to collect their household wastes in a regular basis. .

An innovative way to manage urban biodegradable solid waste especially in the urban areas is by household level composting. The clear problem is in the fact that households lack the know-how in the convenient and innovative means of composting. In realization, composting can be done right in the household for low cost, considering the kind of composting media.

METHODOLOGY

Experimental Design

The experiment was laid out in Complete Randomized Design with four treatments replicated three times.

Treatments

treatment 1 (t_1) = sand, wood charcoal

treatment 2 (t_2) = garden soil, wood charcoal

treatment 3 (t_3) = garden soil, sand, wood charcoal

treatment 4 (t_4) = wood charcoal

Preparation of Composting Materials

The biodegradable solid wastes specifically fruit and vegetable scraps were used as composting materials. Fruit and vegetable scraps were chopped into smaller pieces at about ½ inch in length. Each garbage bag was loaded with 2 parts (in liters) composting medium as first layer, 6 parts (liters) of chopped fruit and vegetable scraps as second layer, and topped with another 2 parts (liters) of composting medium. The contents of the bags were sprinkled with 1 liter of water. The bags were then closed loosely. At one (1) week interval, the materials inside each bag were mixed to aerate the materials and speed up the process. Sprinkling the composting materials with water was also done at one week interval just after mixing.

Sampling

On the forty fifth day, samples were obtained. The composed was separated from the undecomposed materials with the use of a sieve. The composed in each bag was measured separately.

Analysis

After forty five days the decomposed material was evaluated as to its volume, and appearance.

RESULTS AND DISCUSSION

The biodegradable solid wastes specifically fruits and vegetables scraps were decomposed from four different composting media: 1) sand, wood charcoal; 2) garden soil, wood charcoal; 3) garden soil, sand, wood charcoal; and 4) wood charcoal.

On the forty fifth day, the decomposed material was evaluated. The composed that was obtained with wood charcoal alone gave the lowest volume. The low volume of composed obtained from this treatment was due to the low microbial activity. Low microbial activity was attributed from low amount of microbes that were responsible in the decomposition process. Environmental condition brought about by the composting medium was not conducive enough for the activity of the microbes.

The composed obtained from garden soil-wood charcoal showed a higher volume of composed compared to sand-wood charcoal composting medium. This was attributed to higher microbial activity in garden soil than in sand. It is likely that garden soil is conducive for the growth and activity of microbes than in sand.

Of all the composting media used, the composed that had resulted from the garden soil-sand-wood charcoal produced the highest volume of composed and darker in color. It can be implicated from the result that the composed obtained from garden soil-sand-wood charcoal resulted to higher quality and quantity of the product. It was likely that higher quality and quantity had resulted due to higher microbial population and therefore higher microbial activity during the decomposition process.

CONCLUSIONS AND RECOMMENDATIONS

The composed that was obtained from the garden soil-sand-wood charcoal composting medium resulted to higher volume and darker in colour which is attributed to higher population and activity of microbes that will result to faster decomposition and more fertile compost can be obtained with the kind of composting medium.

In composting biodegradable urban solid wastes, the composting medium of garden soil-sand-wood charcoal should be used for higher quantity and quality compost.

Household level composting of biodegradable urban solid wastes should be resorted to using this convenient and affordable means of disposing urban wastes.

The findings of this study can be used as reference for other related study.

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TRAINING AND COACHING NEEDS ASSESSMENT OF A BARANGAY COMMUNITY IN MANILA

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INTRODUCTION

In Philippine communities, there is always a chief, and as a chief acknowledging the problems and needs of his area of responsibility is essential. The researchers have a curiosity about the training and coaching that are provided to the barangay residents especially on teenagers. For the barangay officials able to acknowledge those needs, needs assessment were to evaluate empirically the needs and problems, either individually, socially, academically, and career related and value system related development among the teenagers of the community. The officials in a barangay cannot assess deeply without the valid and reliable study of training and coaching needs assessment, and also the cooperation and participation of the barangay residents are vital to this study.

Barangay 413 is located at 1289 Lardizabal Street, Sampaloc, in the City of Manila. Under the supervision of Hon. Andrew Lopez with a total estimated population of 2796. This barangay is the chosen community for the ESPA's (Elite Students of Psychological Association) extension program wherein they conducted the proposed training and coaching intervention.

A training and coaching needs assessment help to uncover not only the needs and problems, but also the underlying culture and social structure that will help residents understand how to address the community needs and problems. An assessment will encourage community leaders and residents to consider the community resources and how to use them, as well as the community's needs and how to address them.

In this study, the researchers willingly to assessed the training and coaching needs and provided recommendation regarding the needs of the barangay community. This study provided scientific information not only to the subjected barangay but also to the other barangays who have the same problem by further using this study.

METHODOLGY

This study used the descriptive correlational design. This method describes and predicts how variables are naturally related. Through survey, the questions will be asked through the respondents of this study about the topic concern. The correlation measures the relationship between two or more variable. The researchers conducted an investigation using qualitative methods by observing and talking in depth with individuals and group of individuals residing in the chosen community.

The researchers also used quantitative method by using the data derived from the qualitative methods. Through the gathered data, the researchers measured what training and coaching intervention program could be assessed to render to the community, and also exploring the relationship of one variable with other variables.

The questionnaire required information about the training and coaching needs of barangay community and demographic profile of the respondents. It had questions related on programs that their barangay needed and projects they wanted to conduct in the barangay. Statements that are perceived to be factors that influence respondents' decisions were presented. This proposed study utilized a researcher-made questionnaire as the main data gathering instrument that underwent evaluation from experts. The said instrument was made after reading and examination of several questionnaires as main data gathering instrument of similar studies reviewed by the researchers.

RESULTS AND DISCUSSION

The study resulted to several notable findings that strengthened the objectives as well as the preliminary hypothesis of the research work. The following are some of the findings:

1. Profile of the Respondents

Majority of the respondents in Barangay 413 are in the age bracket of 15-18 years of age, while male respondents dominated female respondents with 45.7% of the total population. Out of 138 respondents 54.3% are elementary graduate. Respondents who are first born is 38.4% and those having 4 siblings is 28.3% of the total population.

2. Respondents assessment of Training and Coaching

The residents of Barangay 413 assessed the training and coaching in terms of personal/self, social, academic/career, and value system. The general weighted means are 4.20, 4.18, 4.23 and 3.92 with a verbal interpretation of "Kailangan". Their barangay is in need of training under these variables in order to enhance themselves not just for the good of others but also for their own good and their barangay.

3. Relationship between Profile Variables and the Training and Coaching Needs

The profile variable of the respondents and Personal/Self to sex, age, educational attainment and birth order have no significant relationship, having a p-value of p=.115, p=.760, p=.070 and p= .427 which values is higher than 0.05 level of significance. While as to number of siblings, there is a significant relationship between the Personal/Self with a p-value of p=.024.

The computed p-value of the demographic profile of the respondents such as sex, age, educational attainment and birth order are .141, .750, .138 and .280, respectively, which is greater than the level of significance α=0.05. This provides that there is no significant relationship between the demographic profile of the respondents and social. On the other hand, the profile variable number of siblings has a significant relation with the social needs of the respondents with a p-value of p=0.026.

The profile variable of the respondents and academic/career found no significant relationship having a p-value of p=.531, p=.799, p=.313, p=.131, and p=.421 with the values higher than 0.05 level of significance.

The relationship between the demographic profile of the respondents and Value System found no significant relationship having a p-value of .956, .354, .234, .775, and .118, respectively, where all p-values are greater than the level of significance (α=0.05).

4. Other concerns encountered by the residents

Through tallying the residents' response, it was revealed that they were also concerned to those people who possess and use illegal drugs in their barangay.

CONCLUSIONS

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

1. The majority of the respondents ranged from 15-18 years of age. Most of them were male, college graduate, first born child and had 4 siblings.

2. The respondents assessed their needs with the given variable. Results showed that they are in need of training and coaching to improve the skills, knowledge, and attitudes that can shape the betterment of their barangay.

3. There is a significant relationship between the demographic variable number of siblings to the Personal/Self and Social Needs. The more siblings a person have, the more they demand the Personal/Self and Social Needs.

4. Through tallying the residents' response, it was revealed that they were also concerned to those people who possess and use illegal drugs in their barangay.

RECOMMENDATIONS

Based on the mentioned findings and conclusions, the researchers offered the following recommendations:

1. The barangay may take into consideration the results of the findings that their residents have also needs in terms of personal/self, social, academic/career, and value system especially those people who have a lot of siblings.

2. The barangay may coordinate with the government and non-government organizations to conduct trainings and seminars concerning on livelihood programs to complement the capability development among the residents.

3. The barangay may formulate literacy programs for the children or grown-ups especially the out-of-school youth to improve literacy status of the community.

4. The barangay may coordinate with their Health Care Center regarding the increase of family size. They may provide a family planning program.

5. The parents may have adequate parental supervision to their child so that they will not be involved in using any illegal drugs in their community. The barangay may create a Drug Awareness Program to their residents and have some seminars about Family interventions for drug addictions.

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TITLE : "APPLICATION OF RISK MANAGEMENT SYSTEM IN THE PHYSICAL EDUCATION AND SPORTS PROGRAM OF THE EULOGIO "AMANG" RODRIGUEZ INSTITUTE OF SCIENCE AND TECHNOLOGY"

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Crisanto Barizo

INTRODUCTION

Risk management is a sub-field of business and management that deals with identifying and preventing possible damaging outcomes within an organization. (https://www.google.com).

"Literally speaking, risk management is the process of minimizing or mitigating the risk. It starts with the identification and evaluation of risk followed by optimal use of resources to monitor and minimize the same. Risk generally results from uncertainty. In organizations this risk can come from uncertainty in the market place (demand, supply and Stock market), failure of projects, accidents, natural disasters etc. There are different tools to deal with the same depending upon the kind of risk. Ideally in risk management, a risk prioritization process is followed in which those risks that pose the threat of great loss and have great probability of occurrence are dealt with first. (https://www.managementstudyguide.com)

This study was about the formulation of the risk management system for the Physical Education classes and Sports program of Eulogio "Amang" Rodriguez Institute of Science and Technology by preparing a manual of guidelines. Through the reported records and enumerated identified risks and injuries encountered in the activities of Physical Education and Sports program of the institution, from which this different risks and injuries specific to practical activities of classes and sports activities will be manage purposely for prevention if not mitigate frequency of incidence. Codification of risk management program for Physical Education and Sports program be practiced as an institution guideline.

As per record, the data concretized evidence why risk management of sports and physical education program has to be emphasized, as athletes through their coaches advised and recommendations. In the PE classes there has been a record of four percent (4%) or one hundred fifty-five (155) cases out of three thousand eight hundred eighty (3,880) students in first semester are referred to the clinic from the incidence during classes. While three are percent (3%) or ninety-seven (97) students out of three thousand two hundred thirty-six (3,236) students of PE in the second semester.

Among the student athletes around two percent (2 %) or 6 athletes out of two hundred seventy-one (271) athletes for school year 2018-2019 first and second semester were reported medical cases. Two (2) athletes of which or point seventy-three percent (0.73%) were referred by the SDPE department to proceed to the EARIST clinic for immediate or first aid management later or then referred to either St. Martin De Pores Hospital in Mandaluyong or in Jose Reyes Memorial Hospital in Manila for further evaluation and management.

According to Rene M. Stulz , "some researchers do not specifically define perceived risk but use the operationalization of perceived risk as its definition (cf. Newton 1967; Schiffman 1972). Two different approaches have been applied for perceived risk measurement: (a) measures that ask participants to assess directly the riskiness of a given statement or situation presented in an item without separating probabilities and consequences (Bearden and

Shimp 1982; Cunningham 1967; Jacoby and Kaplan 1972) and (b) measures that include the distinction between probabilities and consequences, such as Peter and Ryan (1976), who observed assessments of probabilities and importance of losses. Such dispersion in the definition and operationalization of perceived risk is reflective of the controversial nature of risk (Fischhoff et al. 1990), with the term interpreted following the custom of a particular research stream." Stipulated in the study of De Meyer et al. (2002) and of Perminova et al. (2008), "the importance of understanding the concepts of uncertainty and risk evidenced in the studies make a contribution to the development of risk management as a discipline. Considering that care with project risks is a strategic concern from the management point of view due to generating better results, and thus project managers can thus invest better in management practices. . The results demonstrate the impact of risk management practices on project success showed a positive impact from the presence of a risk manager on project success."

MATERIALS AND METHODS

This qualitative descriptive study made use of the survey questionnaire guide in collecting primary data through the responses of the thirteen (13) Physical Education Faculty members and forty-five (45) Sports Coaches.

The survey questionnaire was based on the table chart below that categorizes the perceived risk as operationalization risk identified faculty members and coaches based on: (a) measures that ask participants to assess directly the riskiness of a given statement or situation presented in an item without separating probabilities and consequences (Bearden and Shimp 1982; Cunningham 1967; Jacoby and Kaplan 1972) and (b) measures that include the distinction between probabilities and consequences, such as Peter and Ryan (1976), who observed assessments of probabilities and importance of losses. The table chart below used to strategize in various situations. The two factors that govern the action required are the probability of occurrence and the impact of the risk.

The data gathered were treated using the mean percentage distribution just enough to justify qualitative description of the subjects responses.

IMPACT	**ACTIONS**		
SIGNIFICANT	Considerable Management Required	Must Manage and Monitor Risks	Extensive Management essential
MODERATE	Risk are bearable to certain extent	Management effort worthwhile	Management effort required
MINOR	Accept Risks	Accept but monitor Risks	Manage and Monitor Risks
	LOW	**MEDIUM**	**HIGH**
	LIKELIHOOD		

RESULTS AND DISCUSSION

Results findings as classified were the perceived and operationalization risk according to the forty-five (45) Sports Coaches and were the following type of risk are attributed to as twenty-five percent (25%) physical activity /training program-related, thirty-five percent (35%) equipment-related, thirty percent (30%) facility-related risks and ten percent (10%) nutrition support-related . The ***program- related risks*** were due to the following reasons a) failure of the student athlete to follow the correct instructions b) unprepared to undergo the training that day/session c) secondary to poor foundation during off-season training d) secondary to letter "c" chronic/previous injury became aggravated. As far as the ***equipment-related risk*** was attributed to; a) inappropriate supply or personal equipment (sports shoes, injury protection accessories). The ***facility related risks*** are due to a) inappropriate training /playing facility/court b) playing surface of the court c) safety hazards like fixtures, building pillars, walls and concrete benches) The ***nutrition-related risks*** is the primary reason for unprepared to undergo the training that day/session due to starvation improper nutritional support.

Among the thirteen (13) PE faculty members the identified and classified perceived and operationalization risks were; forty-five percent (45%) physical activity-related, twenty-five percent (25%) equipment-related risks , thirty percent (30%) facility-related risks and ten percent (10%) nutrition -related . The ***activity- related risks*** were due to the following reasons a) failure of the student to follow the correct instructions b) unprepared to undergo the activity on that day/session c) failure to have the warm-up due to tardiness d) chronic/previous disease or injury became aggravated (asthma , heart problem history , due to inactive or sedentary life-style and pregnancies). As far as the ***equipment-related risk*** was attributed to; a) inappropriate PE attire or personal equipment (common are sports shoes). The ***facility related risks*** are due to a) inappropriate PE facility/court b) playing surface of the court c) safety hazards like fixtures, building pillars, walls and concrete benches).The ***nutrition-related risks*** is the primary reason for unprepared to undergo the activity on that day/session due to starvation for failure to have breakfast among morning classes and lunch or snacks among afternoon and late afternoon classes.

CONCLUSIONS

The findings based on the table chart, all of the identified risks factors are significantly to be dealt with extensive management essentials to ensure zero risks if not to mitigate the possibilities of occurrence as being preventive or cautious in practices. The risks has to be treated if possible zero in existence or occurrence , some risks are somehow meant to be accepted with specific risk management treatment .Since these identified /perceived risks varies greatly to individuals implicated by each one of the type of risks related over each other. Part of the guideline to be proposed for codification is the proper innovation of the facility as permanent fixtures that just cannot be altered. Purchase of appropriate and standard supplies and equipments granted to student athletes for safe training. While the Physical Education classes aside from what has been proper for the facilities is the proper orientation of the students in attending their PE classes.

Further the table-chart as strategize in the various situations. The two factors that govern the action required are the probability of occurrence and the impact of the risk. It is when the condition where the impact is minor and the probability of occurrence is low, it is better to accept the risk without any interventions yet could be mitigated through proper orientation. A condition where the likelihood is high and the impact is significant, extensive management is required. This is how certain priority can be established in dealing with the risk.

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