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PALMIRA: The CSU-SM Research and Development Journal

GUIDE FOR AUTHORS

Submission of Manuscripts

Manuscripts should be prepared in English, typed double-spaced on one side of A4 (29.7 cm x 21 cm) or letter-size (28 cm x 21.6 cm) paper, with 1-inch margins on all sides. The font should be Times New Roman, size 12. All manuscripts will be reviewed by the Editor-in-Chief prior to acceptance.

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The following style guide must be strictly followed when submitting manuscripts for journal publication:

1. **Minimum Number of Characters**: The publication must contain at least 30,000 characters (including spaces).

2. **Minimum Word Count**: The publication must contain a minimum of 5,000 words.

3. **General Requirements**: Articles eligible for publication must be the results of studies that have been reviewed and evaluated by a technical committee.

4. **Manuscripts**: Manuscripts should be submitted in both hard copy and electronic formats. All pages should be numbered, except for the first page. The following content format must be observed:

   - Title
   - Author/s
   - Affiliation
   - Abstract
   - Keywords (3-5 words)
   - Introduction
   - Methodology
   - Results and Discussion
   - Conclusion (not numbered)
   - Recommendation (not numbered)
   - Literature Cited
   - If needed, put Acknowledgment before the Literature Cited

Units of Measure. Use the decimal system for measurements and weights, rather than fractions. The International System of Units (SI) should be adopted. Use the appropriate measurement symbol when attached to a numeric value (e.g., 25 m); otherwise, spell out the measurement (e.g., meters from here). Do not use plural forms or periods for abbreviations of units. Use a slash for compound units (e.g., 1 kg/ha/yr). Place a zero before the decimal point in numbers less than 1 (e.g., 0.25).

The name of the month should be spelled out when used alone. Use the % symbol with numerals (e.g., 30%); otherwise, spell out "percent" or "percentage." Use recognized symbols for chemical elements. Other abbreviations and acronyms may be used if already defined when first mentioned in the text.

Title. A good title briefly identifies the subject, indicates the purpose of the study, and includes keywords. The title length should not exceed 12 words.

Abstract. The abstract must be fully self-explanatory, including the reasons for conducting the study, the objectives, methods used, results, and conclusion. It should be capable of 'standing alone' and could potentially be published separately. A good length for an abstract is between 200 and 250 words.

References. References should be arranged alphabetically according to the APA 7th edition format. For journal articles, they should include the following: names of all authors (surname followed by initials), year of publication (in round brackets), article title, journal title (in italics), volume number (in italics), issue number (if applicable), inclusive page numbers, and DOI (presented as a hyperlink, for example, https://doi.org/xxxxx). For books, the basic reference list entry should include: author(s) (surname followed by initials, year of publication (in round brackets), book title, edition (in round brackets, if other than first edition), publisher, and DOI (if available, even for print books).

Include only works cited within the text. Capitalize only the first word of a paper title, as well as proper nouns and element symbols. The first line of each citation should be left-aligned, with every subsequent line indented by 5-7 spaces.

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1. Are the writing style, grammar and use of language meeting the College level standards and higher?			
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3. Does the research contribute something new in the study area? Will it help advance existing theory or eventually help establish new theory in the discipline?			
4. Does the study proceed from a sound theoretical foundation?			
5. Does the study have good potential to be cited by other researchers?			
6. Does the paper utilize appropriate transitory elements to establish coherence and smooth flow of ideas presented in each subsection?			
Presentation			
7. Does the article have concrete regional perspective that gives regional significance of the findings and conclusions?			
8. Does the article have a global perspective that shows trends on the topic worldwide?			
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12. Is the introduction appropriate to the paper's subject?			
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16. Is the design of the study consistent with its aims and scope?			
17. Is the sample representative of the population in question?			
18. Is the method of selecting the sample/cases clearly described?			
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20. Is there explicit compliance to ethics protocol?			
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Literature Cited			
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COMPARATIVE STUDY ON THE EFFECT OF FERMENTED MADRE DE AGUA LEAVES AND TARO ON THE GROWTH PERFORMANCE OF FATTENING PIGS

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ABSTRACT

This study assessed the impact of fermented Taro and Madre de Agua leaves on the growth performance of fattening pigs during a two-month growth stage. The research was conducted at CSU old site, Nagbaranganan, Sanchez Mira, Cagayan for about two months, employed a Complete Randomized Design with treatments involving fermented taro and fermented madre de agua leaves as supplements to commercial feeds. Nine (9) experimental pigs were randomly distributed into three treatments and replicated three times. The findings revealed that the inclusion of fermented madre de agua leaves significantly enhanced the growth performance of the pigs. In conclusion, the study established that fermented madre de agua leaves outperform fermented taro in influencing the growth performance of fattening pigs over a two-month period. Pigs fed with commercial feeds displayed superior feed-to-meat conversion efficiency. Therefore, it is recommended that fermented madre de agua leaves be considered as a viable feed supplement for pig rations, with the potential to enhance the overall growth performance of pigs. This research offers valuable insights for the swine industry, emphasizing the benefits of utilizing fermented madre de agua leaves in pig nutrition.

Keywords: fermented taro, feed suppleent, growth performance, madre de agua, pigs.

INTRODUCTION

The swine industry is a 191 billion industry, the largest among the animal industries and the second largest contributor to Philippine agriculture next to rice in 2020. It dominates other livestock industries, providing about 60% of the total animal meat consumption of Filipinos. It is also significant globally as the Philippines ranks 8th in world swine production with 1,370,000 metric tons in 2015 (USDA FAS, 2016).

However, escalating feed prices remain a major problem among hog raisers. The need for alternative feeds will lessen the feed cost. Fermented supplements are specific nutrients that have been fermented to increase bioavailability and can aid in pre-digestion in animals that will enhance nutritional quality. Feeds are edible materials that are consumed by livestock for their nutritional needs. It is a combination of nutrients added to livestock feed to improve the nutritional balance and performance of the animal. This provides a healthy balanced diet as a source of additional vitamins and minerals and proves to be beneficial that ensures farm animals their nutritional needs.

Recent studies have tested different fodder crops for its potential to be utilized as feed supplement. One of the fodder crops is madre de agua scientifically known as *Trichanthera gigantea*, a non-leguminous tree brought to the Philippines from Columbia, Latin America and it is considered one of the best protein sources in preparing feeds (Diaz, 2012). Another is the popular herbaceous plant taro scientifically known as *Colocasia esculenta*, as it is grown throughout humid tropics, its corms and leaves being the edible part of the plant. Taro has great potential as an animal feed supplement and is now a staple food for pigs being significantly lower in cost compared to commercial feeds (Chittanvong Malavanh et al, 2007).

Objectives of the Study

Generally, this study compared the effects of fermented madre de agua leaves and fermented taro as feed supplement on the growth performance of growing-fattening pigs. Specifically, it compared the effects of fermented madre de agua leaves and fermented on the following parameters:

1. Initial Weight (kg)
2. Weekly Weight Gain (kg)
3. Final Weight (kg)
4. Gain in Weight (kg)
5. Total Feed Consumed (kg)
6. Feed Conversion Ratio (kg)
7. Feed Conversion Efficiency (%)

METHODOLOGY

This study focused on the effects of fermented madre de agua and fermented taro leaves as feed supplement. This undertaking was conducted in May - August 2022. The limitation of this study includes (1) observing the effects of the treatment on one breed of pig and (2) the evaluation of performance of the treatment for two months. This study was conducted at CSU- Old site situated at Nagbaranganan, Centro 2.

Materials of the Study

Sanchez Mira, Cagayan from May 19 to August 1, 2022.

The materials that were used in the study are the following: nine piglets, piggery house, commercial feeds, feeding trough, two large container drums, nine plastic pails, two dippers, one mechanical weighing scale, taro, madre de agua leaves, cleaning materials, water system and recording materials.

Methods of the Study

The Completely Randomized Design (CRD) was used in the study containing three (3) piglets per treatment, each treatment having three (3) replications. In the study, grower-finisher pigs were used as experimental units. The treatments in the study of Manaig in 2017 and Chittavong Malavan et.al. in 2007 were followed and slightly modified for the study

T1- 100% commercial feeds
T2- 250g of fermented Madre de Agua per 1000g commercial feeds
T3- 250g of fermented Taro per 1000g commercial feeds

Procuring the Piglets

The piglets were procured from Namuac, Sanchez Mira, Cagayan. The piglets were given vitamins and iron through injection on their 7thday from day of birth. The piglets were de wormed twice during the study. The first was administered two weeks from the start of the study and the second was done after two months. The piglets were castrated after 31 days from birth.

Preparation of Fermented Madre de Agua

The leaves of madre de agua were collected at Payagan West, Ballesteros, Cagayan. The leaves were chopped into1 inch and mixed with molasses in 1:1 ratio. The mixture could ferment in a large drum for 7 days before administration.

Preparation of Fermented Taro

The taro plants were collected from Sanchez Mira, Cagayan. The plants were chopped into to 1 inch and mixed with molasses in 1:1 ratio. The mixture could ferment for 21 days in a large drum before administration.

Feeding Management

The pigs were fed three times a day at 8:00am, 11:30am and 4:00pm. Restricted feeding was used in the study following the recommended amount as stated by the company that manufactured the commercial feeds and auto drinkers were installed and water was given to the pigs ad libitum.

Data Gathering Procedure

In the conducted study, a comprehensive assessment of growth performance parameters in pigs was undertaken. The Initial Weight was measured, providing a baseline before the implementation of treatments. Subsequently, a systematic analysis of Weekly Weight Gain was performed by regularly weighing the pigs each week and subtracting the previous recorded weight, allowing for ongoing monitoring of their progress. At the culmination of the study, Final Weight was determined through careful weighing, offering a conclusive measure of their growth performance. The Gain in Weight was determined by subtracting the Initial Weight from the Final Weight, quantifying the net growth achieved. Furthermore, Feed Conversion Ratio was calculated, measuring the efficiency of feed utilization by dividing the total feed consumed by the Body Weight Gain. To gauge Feed Conversion Efficiency, the study evaluated the ratio of total gain in weight to the feed consumed, multiplied by 100 to get the percentage FCE. This comprehensive examination of growth performance in pigs provides valuable insights for swine management and optimization of production processes, enhancing overall productivity.

Data Analysis

The data gathered were statistically analyzed using the Analysis of Variance (ANOVA) and Least Significant Difference in Completely Randomized Design.

RESULTS AND DISCUSSION

A. Initial Weight

Table 1 shows the Initial Weight of the experimental animals in kilograms (kg) prior to the treatment application. Before the treatments were applied, it was observed that Treatment 2 had the highest mean with a mean of 40.33kg, followed by Treatment 3 with a mean value of 39 kg and Treatment 1 with a mean value of 32.33kg.

Using the Analysis of Variance (ANOVA), it was found that there is no significant difference in the initial weights per replicate. No significant differences in weight are evident upon the arrival of the pigs. The pigs were given starter feeds for 3 weeks and the treatments were given at the start of the grower stage.

Table 1. Initial Weight of the experimental animals in kilograms (kg)

TREATMENTS	WEIGHT (Kg)
T1R1	27
T1R2	37
T1R3	33
T2R1	48
T2R2	36
T2R3	37
T3R1	38
T3R2	34
T3R3	45

B. Weekly Weight (kg)

The weekly weight was determined every Monday by using a weighing scale and the weight was determined per replicate. The data gathered are summarized in Table 2.

Table 2 shows the weekly weight in kilograms (kg) of the animal given fermented madre de agua leaves and fermented taro.

During the first week of weighing, Treatment 2 recorded the heaviest mean value of 51.33 kg followed by Treatment 3 with a mean of 50.33 kg (treated with 25% fermented taro mixed with commercial feeds) and the lowest is Treatment 1 with a mean of 40 kg given only commercial feeds. It is observed that on the second week, Treatment 2 is heavier than Treatment 1 and Treatment 3. Using Analysis of Variance, it was found out that there is a significant difference in the weekly weight of the animals given the different treatments.

On the second week of weighing, Treatment 2 recorded the heaviest mean value of 61 kg followed by the Treatment 3 with a mean of 58.33 kg and Treatment 1 had the lightest weight with a mean of 47 kg. It was then observed that the animals in Treatment 2 gained more weight than the animals in Treatment 3 and Treatment 1. The higher gain in weight of the animals given commercial feeds and fermented madre de agua

conforms to the study of Manaig E. entitled, "Utilization of Madre de Agua (Trichanthera gigantea var. guianensis) Leaf-meal as feed for Growing-Finishing Pigs" published in 2017, where madre de agua improved the growth performance of pigs. It may also be revealed in the study of Ngo HuuToan and T. R. Preston, "Taro as a local feed resource for pigs in small scale household condition" published in 2010, feed intake, rate of live weight gain and feed conversion of Treatment 3 supplemented by fermented taro were best when the combined Taro leaves and stems were ensiled.

Table 2. Weekly weight of pigs in kilograms (kg) given madre de agua leaves and taro.

C. Final Weight

Table 3 shows the Final Weight of the animal in kilograms (kg) on the effect of fermented madre de agua leaves and taro

During the final weighing, Treatment 2 recorded the heaviest mean value of 61 kg (treated with fermented madre de agua leaves mixed commercial feeds) followed by T3 with a mean of 58.33 kg then T1 is the lowest with a mean of 47 kg. Based on the results of Manaig E., pigs fed with fermented trichantera leaves performed significantly in terms of weight gain.

Treatment	Weekly Weight			
	1	2	3	4
T_1R_1	27kg	37kg	44kg	52kg
T_1R_2	37kg	47kg	54kg	62kg
T_1R_3	33kg	36kg	43kg	49kg
T_2R_1	48kg	55kg	64kg	69kg
T_2R_2	36kg	51kg	61kg	68kg
T_2R_3	37kg	48kg	58kg	65kg
T_3R_1	38kg	49kg	54kg	60kg
T_3R_2	34kg	51kg	62kg	68kg
T_3R_3	45kg	51kg	59kg	65kg

T1 – control   T2 – Madre de Agua
T3 – Taro

Table 3. Final Weight (kg) of pigs given fermented madre de agua and fermented taro.

TREATMENTS	WEIGHT (Kg)
T1R1	52
T1R2	62
T1R3	49
T2R1	69
T2R2	68
T2R3	65
T3R1	60
T3R2	68
T3R3	65

A.   Total Gain in Weight (kg)

Table 4 shows the total weight gain (kg) in the three weeks of treatment application.

It was observed that on the first week that Treatment 3 supplemented with fermented taro recorded the heaviest weight among the treatments with a mean value of 11.333 kg followed by Treatment 2 with a mean value of 11 kg and Treatment 1 attained the lowest weight with a mean value of 7.6667 kg. There are no significant differences among treatment means.

In the second week, Treatment 2 recorded the heaviest weight with a mean value of 9.667 kg, followed by Treatment 3 with a mean value of 8 kg. Treatment 1 had the lowest weight gained with a mean value of 7 kg. It was found using analysis of variance that there is no significant result between the treatment means.

In the third week, Treatment1 recorded the heaviest weight gain with a mean value of 7.3333 kg followed by Treatment 2 which had attained a mean value of 6.3333 kg. Treatment 3 achieved the lowest weight gain with a mean value of 6 kg. The analysis of variance resulted to not significant among treatment means.

In terms of total weight gain, Treatment 2 supplemented with fermented madre de agua recorded the heaviest mean value of 27 kg followed by Treatment 3 with a mean of 25.3333 kg then Treatment 1 with a mean value of 22kg. Based on the results, pigs supplemented with fermented madre de agua leaves performed significantly better than the pigs supplemented with fermented taro and commercial feeds in terms of total weight gain. This conforms with the study of Manaig E."Utilization of Madre de Agua (Trichanteragigantea var. guianensis) Leaf-meal as feed for Growing-Finishing Pigs" published in 2017.

Table 4. Gain in weight of pigs in kilograms (kg) given fermented madre de agua leaves and fermented taro

Treatments	Weekly Weight			
	1	2	3	Total
T_1R_1	10g	7kg	8kg	25kg
T_1R_2	10g	7kg	8kg	25kg
T_1R_3	10kg	7kg	8kg	25kg
T_2R_1	3kg	7kg	6kg	16kg
T_2R_2	7kg	9kg	5kg	21kg
T_2R_3	15kg	10kg	7kg	32kg
T_3R_1	11kg	10kg	7kg	28kg
T_3R_2	11kg	5kg	6kg	22kg
T_3R_3	17kg	11kg	6kg	34kg
CV	45.70	21.45	14.38	25.02
ANOVA	NS	NS	NS	NS

B.   Feed Conversion Ratio and Efficiency

Table 5 summarizes the feed conversion ratio and feed conversion efficiency in four weeks on the growth performance of fattening pigs given fermented madre de agua and taro.

The experimental animals supplemented with commercial feeds (T1) attained FCR with a value of 2.9925kg compared to the treatment group given to fermented madre de agua leaves with a value of 2.67361 and fermented taro with a value of 2.91355. There are no significant differences among the treatment's needs.

The feed conversion efficiency, Treatment 1 attained the highest FCE with a value of 50.85 followed by Treatment 3 with a mean value of 38.5714 and Treatment 3 group with a mean value of 36.0105. Based on the results, Treatment supplemented with commercial feeds perform significantly better with pigs fed with fermented madre de agua leaves and fermented taro in terms of feed conversion.

The analysis of variance revealed significant results among the treatment means, meaning the controlled group is the more effective and efficient at converting feeds into meat. The lower feed conversion ratio and higher feed conversion efficiency of the control treatment, Treatment 1, is attributed to the significantly less amount of feed given to the experimental pigs. It is still recommended for pig raisers to give fermented madre de agua leaves and taro because of their effect on the growth performance of pigs and that these food additives are free and abundant in the locality.

Table 5. Feed Conversion Ratio and Efficiency

TREATMENT	FCR	FCE
T1– Control (CM 100%)	2.9925	34.921
T2 - FMDAL (CM 100 + FM 25%	3.0078	34.286
T3- FT (CM 100% + FT 25%)	6.555467	32.16967
ANOVA	NS	NS

C. Total Feed Consumption

Table 6 shows the weekly and the total feed consumed of the pigs for 4 weeks. The table showed the all the feed given to the experimental animals were consumed.

Table 6. Feed Conversion Ratio and Efficiency

Treatments	Weekly Feed Consumed			Total
	1	2	3	
1	63kg	63kg	63kg	189kg
2	78.75kg	78.75kg	78.75kg	236.25kg
3	78.75kg	78.75kg	78.75kg	236.25kg

CONCLUSION

The study concludes that the fermented madre de agua leaves is better than the fermented taro on the effect of the growth performance of fattening pigs for two months of application. Pigs treated with commercial feeds are better at converting feeds into meat.

RECOMMENDATION

Based on the drawn conclusion, it is therefore recommended that the use of fermented madre de agua can be a viable feed supplement of feed ration of pigs and will improve the growth performance of pigs.

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DESIGN, FABRICATION AND PERFORMANCE EVALUATION OF AN

IMPLEMENT-TYPE SOIL FINISHER

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ABSTRACT An implement type soil finisher was designed using AutoCAD software and fabricated of locally available materials using local manufacturing technology. It was tested to evaluate its performance in terms of its operating time, actual field capacity, field efficiency and fuel consumption rate at three varying range of angular speed of the engine (T_1 – 1500 - 2000 rpm, T_2 – 2001-2500 rpm and T_3 – 2501 - 3000 rpm). The study was laid-out in completely randomized design. Results revealed that increasing the angular speed of the engine would result to a faster operating time of the machine and consequently increase its field capacity, field efficiency and fuel consumption rate. The maximum actual field capacity and fuel consumption rate of 1181.16 m^2/h and 0.767 L/h, respectively, were achieved at engine's angular speed of 2501 rpm – 3000 rpm. The fastest operating time was achieved at engine's angular speed of 2501 rpm – 3000 rpm while the maximum field efficiency was achieved at engine's angular speed of 1501 – 2000 rpm. The use of the developed soil finisher would result to an increase in field capacity by 1382.86% compared to the traditional method (manual mulching).

The machine entailed an investment cost of P15,483; break-even point of 1.62 ha/yr, annual generated income of at a laying plastic mulch of P 46,530.458/yr. The projected time needed to recover the cost of the machine based on 987 m^2/h actual field capacity was 3 days. The use of the machine will lead to a decrease of P 14, 700.00 in the production cost.

Keywords: actual field capacity , design, evaluation, field efficiency, implement-type, soil finisher

INTRODUCTION

In recent years, different techniques has been developed to minimize the loss of water through evaporation such as the use mulching material like plastic mulch or other organic materials available in the farm (Game et al. 2017). Mulching is the process of covering the soil with organic or inorganic materials that benefits farmers due to the increase of crop yield, moisture conservation, reduction of weeds, and accurate germination rate (Gowd and Prassad, 2017). Therefore, several kinds of organic mulches are widely used to control weeds and to enhance plant health (Tiquia, 2002). Organic mulching material usually used by farmers are dry leaf, paddy straw, saw dust, coconut husk and available organic matters that can be used as mulches. Though these organic materials are beneficial, they were found to have inherent weaknesses and not easily available in large quantities. This led to the use of plastic films as mulches which are today the most preferred material because they are easily available, easy to handle, transport and lay (Mishra et al. 2011). More growers are using plastic mulches each year because of its many advantages over organic mulches, such as moisture retention, leaching reduction, reduced soil compaction of soil and quality of products (Maughan and Drost, 2016). Plastic mulches are manually laid on the prepared

seedbed and this process is characterized as labor intensive, and poor quality of works due to the disturbance of wind during operation and additional causes of problem is the handling of the material (Moses et al. 2018). According to Reynolds (2009), globally every year over 80,000 square km of agricultural lands are covered with plastic mulch films. Keeping these considerations, different plastic mulch laying machines has been developed, such machines are, manual mulching machine, animal drawn plastic mulch laying machine and power operated mulching machine.

Development of plastic mulch laying machines in other countries are dramatically increasing due to the increasing demand of farmers in terms of the types of plastic mulches to be used and speed of operation. Moses et al. (2018) evaluated the performance of the manual mulching machine and it was found out that the actual field capacity of developed mulch laying machine varies by 0.1 in comparison to manually mulch laying. In India the development of animal drawn plastic mulch laying machine was developed and fabricated successfully considering the standard design consideration such as functional requirements, theoretical considerations, agronomical requirements and economical consideration. An animal drawn plastic mulch laying machine was developed aiming to increase the

utilization of draught animals and worked satisfactory in actual field condition for laying of plastic mulch film. The use of draught animals is economical for farmers, easy to transport in the field, effective in operation and minimizes the labor (Omprabha, 2018). And according to Pal et al. (2018) power operated machine is effective but not economical for small farmers and it requires larger field, uniformity in the topography, needed road facility to reach the machinery in the field as well as high powered tractor is required to operate the machine.

The used of draught animals for land preparation for vegetable productions has decreases because of the other increasing needs of the society as a result farmers usually practice manual operations. Other studies were conducted for power operated mulch laying machine. The studies were successful both for paper and plastic mulches. With the used of power operated machines the quality of products and income of farmers per annum increases through the increased of cropping intensity. The existing plastic mulch laying machines are also economical to use but its effectiveness can just be utilized at specified conditions such as high land holding and uniform topography.

In the northern part of Cagayan, it was estimated that around 1500 farmers accounted to 750 hectares was engaged in vegetable production uses plastic mulch. (DA Report). Thus, there is a need to design a machine that may have same features as th e existing machines but of for lowland farmers with small scale farms for vegetable production. A soil finisher is believed that it will significantly help in preparing a seedbed essential for the growth of the plants. A combination of a raised bed machine and a plastic mulch laying machine that will properly manipulate the soil, prepare the plantation bed and at the same time will lay plastic mulch on the prepared bed. The result of this study is valuable for it will facilitate the seedbed preparation effectiveness in handling soil for vegetable production. The combination of soil bedding and mulching will increase the farmer's productivity and yield potential of crops and quality of products. Hence, this study was conducted.

Objectives of the Study

Generally, this study designed, fabricated, and evaluated the performance of an implement-type soil finisher. Specifically, in terms of:
1. Operating Time
2. Actual Field Capacity
3. Field Efficiency
4. Fuel Consumption Rate
5. Cost Analysis

METHODOLOGY

This study employed an engineering design, thorough planning and comprehensive analysis to achieve the objectives of the study. It also considered the performance and experimental testing to evaluate the performance of the fabricated machine. This involved good analysis and evaluation of the different parameters to realize the expected outcome.

Design and Construction of the implement-type soil finisher

The design and construction of the component parts of the implement-type soil finisher shown in Figure 1 was constructed using angle bar, rubber, bearings, black sheet, GI pipe, and square bar. The main frame (1) of the equipment was constructed using 2 in. x 2 in. x 3/8 in., with a total dimension of 182 cm x 90 cm x 35 cm. The frame was made rigid and designed so as to support the other components of the machine and to support different loads and it is where the mulch laying unit, the press wheel, the soil bedding unit and the covering unit are being attached. The bedding unit (2) of the equipment was made of 2 mm metal steel plate aided with round bars attached to the main frame. It is responsible for the formation of seedbed at a designed height of 10 - 12 cm and a width of 40 cm. The mulching mechanism (3) was constructed to cover the formed bed and it was made up of 1 in. diameter GI pipe and 2 mm black sheet attached to the main frame through bolts ant nuts capable of holding one roll of 80-cm plastic mulch. Press wheels (4) were installed at the side of the implement that pushes the edges of the 80-cm plastic mulch into the open furrow. The equipment was also equipped with a 20-cm concave disc (5) situated 10 cm behind the press wheels that is responsible in covering the edges of the plastic mulch with soil. The orientation of the concave disc was designed to allow digging up enough soil to cover the edges of the film and both components are attached to the main frame. The source of power for the equipment was a diesel engine with a rated capacity of 12 hp and rated speed of 3000 rpm. The concept design was created using the AutoCAD software.

Fabrication was done after thorough design review. The fabrication was done at local fabrication shop. It was constructed using the locally available materials. The prototype was fabricated in accordance with the specifications. The materials and their corresponding sizes were strictly followed.

Principles of Operation

The implement was pulled by a two-wheel, walking-type agricultural tractor. At the time the diesel engine starts to move forward, the bedding unit forms a seedbed and after a certain distance of formed seedbed, the plastic mulch was unwind and manually lay out at the end of the formed seedbed. The operation continues after the initial setting up of the plastic mulch. The end of the plastic mulch was pressed into the furrow formed by the bedding unit through the wheels attached to both sides of the implement and it was covered with soil by the aid of a concave disc. Upon reaching the designed length of the formed seedbed, manual cutting of the plastic mulch was made and to facilitate headland turning, clutching mechanism was added to the equipment.
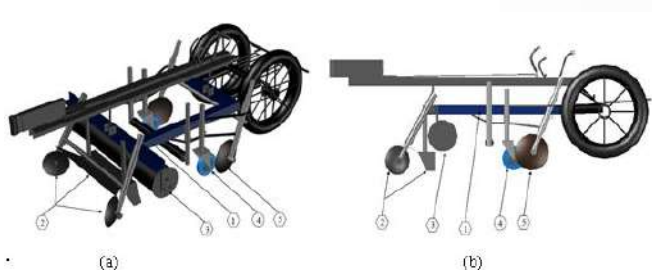
Figure 1. Component parts of the implement-type soil finisher, (a) perspective view and (b) side view.

Design Calculations and Performance Evaluations

The following formulas and equations were used in the conduct of the study:

1. **Effective/Actual Field Capacity.** The function of field speed, operating width and field efficiency expressed in hectares per hour can be calculated using the formula,

$$C = \frac{60E}{T}$$

where:
C = effective field capacity, m^2 /h
E = effective area accomplished, m^2
T = operating time, min

2. **Theoretical Field Capacity.** The function of speed and operating width expressed in hectares per hour.

$$Co = w \times S$$

where:
C_o = theoretical field capacity, m^2/h
w = theoretical working width, m
S = speed of tractor, m/h

3. **Field efficiency**. This refers to the ratio between the productivity of a machine under field conditions and the theoretical maximum productivity.

$$Eff = \frac{C}{Co} x100$$

where:
Eff = field efficiency, %
C = effective field capacity, m^2/h
C_o = theoretical field capacity, m^2/h

4. **Effective area accomplished.** This refers to the actual area accomplished by the machine expressed in square meter, m^2.

$$E = wD$$

where:
E = effective area accomplished, m^2
w = actual working width, m
D = total distance traveled, m

The total distance traveled can be calculated using the formula,

$$D = \frac{A}{S}$$

where:
D = total distance traveled, m
A = area of plot, m^2
S = average swath or width of cut, m

5. **Fuel Consumption Rate, L/h.** The amount of fuel consumed per replication by the prime mover in L/h.

$$Fc = \frac{V}{T}$$

where:
Fc = fuel consumed, L/h
V = volume of fuel consumed, L
T = total operating time, h

6. **Cost Analysis.** Simple cost analysis was undertaken to evaluate the economic impact of the machine. The total cost of the operation was determined by considering its fixed costs and variable costs. In addition, other economic indicators were also considered such as Break-Even Point, Benefit-Cost Ratio and Payback Period.

Functionality Testing

Preliminary testing of the equipment was conducted to establish its operating parameters. During this stage, some modifications were incorporated to remedy the problems encountered during the initial operation. When all the parts were functionally working, a series of operation was conducted to assess its performance.

RESULTS AND DISCUSSION

A. Operating Time (seconds)

The operating time of the machine as affected by the different ranges of engine's angular speed is presented in Table 1. The stripping time decreases as the angular speed of the engine increases. However, 54.66 seconds operating time

at an angular speed of 1500 rpm is comparable to 38.22 seconds operating time at an angular speed of 2501 - 3000 rpm.

B. Actual Field Capacity, m²/h

The performance of the machine when operated at different ranges of engine's angular speed is reflected in Table 1. Generally, the actual field capacity of the machine was not affected significantly when it is operated at angular speed ranging from 1500 rpm to 2500 rpm. Although, the three ranges of the angular speed of the engine did not affect significantly the actual field capacity of the machine, it may be evident that the increase in the angular speeds positively affects the actual field capacity as manifested by the increase in actual field capacity from 802.14 m²/h to 1181.16 m²/h when operated from a 1500 rpm to 3000 rpm. This shows that the actual field capacity would increase when the machine was operated at higher angular speeds.

C. Field Efficiency, %

Table 1 presents the test results for the field efficiency of the machine at different angular speed of the engine.

Results revealed that the field efficiency of the machine operated at different engine speed was not significantly affected. It implies that, operating the engine at different angular speed gives the same efficiency and this could be due to the fact that the actual field capacity of the machine. The field efficiency of the machine was 63.74%, 56.77%, and 57.28% operated at an engine's angular speed of 1501-2000 rpm, 2001-2500 rpm, and 2501-3000 rpm, respectively.

D. Fuel Consumption Rate (L/h)

The fuel consumption rate as affected by different ranges of engine speed is reflected in Figure 1. Analysis of Variance of the means indicates that the engine speed caused significant variability among means. These results showed that the engine speed has an effect in fuel consumption rate. Comparison of means using LSD revealed that the highest fuel consumption rate was when operated at 2501-3000 rpm with a mean of 0.767 L/h. In addition, the lowest fuel consumption rate was when operated at 1501-2000 rpm with a mean of 0.306 L/h. It

is evident that the increase in angular speed resulted to an increase in fuel consumption rate. This suggests that the faster the speed of the engine, the higher the fuel consumption rate of the machine. This is possible because the faster the speed of the engine caused to burn fuel faster and hence a greater amount of fuel consumed.

E. Cost analysis

The cost analysis on the fabrication of the soil finisher was undertaken to evaluate if the machine can be considered economically viable. The standard costing of the machine was based on the direct cost of material, process operation, labor and overhead. Number of pieces required for components were recorded and cost of material was ascertained on prevailing market price and the cost of labor was estimated from standard wage rate of a farmer.

The machine entailed an investment cost of P15,483; break-even point of 1.62 ha/yr, annual generated income of at a laying plastic mulch of P 46,530.458/yr. The projected time needed to recover the cost of the machine based on 987 m²/h actual field capacity was 3 days. The use of the machine will lead to a decrease of P 14, 700.00 in the production cost.

Comparative Performance Evaluation of the Soil Finisher and Manual Method of Preparing Seedbed and Laying of Plastic Mulch.

Comparative performance evaluation was conducted, and data were gathered during field trials of different methods of performing the operation to determine the effectiveness of the soil finisher over traditional method. Corresponding to the data gathered, it has been analyzed that the soil finisher shows an efficient performance.

CONCLUSIONS

The operating time decreases as the angular speed of the engine increases while the actual field capacity and fuel consumption rate increases as the angular speed of the engine increases.

Test of difference was used to examine the data and it has been revealed that the speed of operation using the soil finisher and doing the traditional method is highly significantly. The result further implies that the soil finisher can finished the operation with a speed of 2.46 kilometers per hour, whereas, performing the operation manually will spend time to about 83 times more than using the machine. It was also found that the soil finisher has 15 times more of actual field capacity with 986.99 m²/h than the traditional method which has an actual field capacity of 66.56 m²/h in total.

Table 1. Summary of performance of the machine during the performance evaluation using three ranges of engine's angular speed.

Treatments	Operating Time, s	Actual Field Capacity, m²/h	Field Efficiency, %	Fuel Consumption Rate, L/h
T₁ (1500 rpm)	54.66	802.14	63.74	0.306[c]
T₂ (2000 rpm)	43.67	977.66	56.77	0.469[b]
T₃ (2500 rpm)	38.22	1181.16	57.28	0.767[a]

Treatment carrying different letters are significantly different at 1% level.

The fastest operating time of 38.22 seconds was obtained when the soil finisher was operated with 1500 to 3000 rpm.

The highest actual field capacity of 1181.16 m²/h was obtained when the machine was operated with 1500 rpm to 3000 rpm.

Operating the soil finisher at 2501-3000 rpm angular speed of engine consumed the highest fuel consumption of 0.767 L/h.

RECOMMENDATIONS

1. To achieve the desired performance of the soil finisher, the following are recommended:
2. For operations, the machine is recommended for use of farmers who still practice manual soil bedding and plastic mulch laying. For modification, cutting mechanism for the plastic mulch shall be added.

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PHENOMENOLOGIZING THE EXPERIENCES OF THE CRIMINOLOGY STUDENTS TO ONLINE CLASS AMIDST COVID-19 PANDEMIC

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ABSTRACT

This study generally determined the experiences of the criminology students in online class amidst COVID-19 pandemic, and defined the challenges and their coping mechanisms to these challenges that they have experienced in an online class during the pandemic. An interview guide and an interview sheet in question-and-answer form were used to determine these challenges their coping mechanisms. The data gathered were analyzed and interpreted in themes and sub-themes. The challenges encountered by students are the following: Inconsiderate teachers, Noisy learning environment, unavailability of gadget and connectivity, and financial constraints. Their coping mechanisms include avoidance, positivity/resiliency and adjustment.

Keywords: Challenges, coping mechanisms, criminology, online class

INTRODUCTION

Learning should not halt (Mateo, 2018). Different countries worldwide have introduced various answers during the pandemic to continue the education process through the introduction of distance learning. These are online learning platforms such as Google, TV broadcasts, guidelines, resources, video lectures and online channels were introduced (UNESCO, 2020).

In addition, the Department of Education (DEPED) emphasized that it's not necessary to go to school to learn (DepEd, 2020). On the other hand, the Commission on Higher Education (CHED) suggested to strengthen online platforms (CHED, 2020). Both will adopt numerous learning delivery options.

According to Karalis (2020), to sustain and provide quality education despite lockdown and community quarantine, the new normal should be taken into consideration in the planning and implementation of the "new normal educational policy." Within the new normal, the situation presents a unique challenge to every educational leader's decision-making process.

Teachers and students will be required to strictly follow hygienic practices, health protocols and other precautionary measures such as contact tracing, foot baths, sanitation and frequent hand washing. Students, teachers, staff and alumni initiated various projects and activities to solicit and extend support and resources to ensure the safety of healthcare workers, food producers and distributors, grocery and supermarket workers, and law enforcement agents manning checkpoints (Simbulan 2020). In addition, public health is a concern that needs to be prioritized.

In terms of teaching, teacher training to online instruction, blended learning and distance learning is also recommended in order to adjust to the new instructional format (tuquero, 2020). Teacher competencies in both pedagogy and technology should be reinforced. This transition to the new normal, from the four corners of the classroom to the borders of virtual reality, every learning institution needs to study successful online learning is in providing quality education and outcomes-based education to students (Basilica & kvavadze, 2020).

The production of learning modules in time for the opening of classes forced educators to find additional funding sources for the printing and reproduction. Some teachers had to cross rivers to distribute these modules to the homes of their students. Despite of this sacrifices, there are still Minority instructors received lower evaluations in an online learning than in face-to-face class (Carle, 2009). While students can't afford to have mobile gadgets and access internet. Even if there are some ways to provide them gadgets, the telecommunications infrastructure of the country is ill-equipped to cater the internet connectivity needs of everyone (Dollangager, 2020).

Therefore, it will be noteworthy for the researchers to understand and explore the experiences of the College of Criminal Justice Education students at Cagayan State University - Sanchez Mira Campus to online classes amidst Covid-

19 pandemic. Moreover, the researchers would like to explore challenges, coping mechanisms and intervention programs to online classes amidst Covid 19 pandemic.

Objective of the Study

The researchers explored the experiences of CCJE students in online class conducted in pandemic. Specifically, it sought answers to the following questions.

1. What are the challenges experienced by CCJE students in online class amidst Covid 19 pandemic?

2. What are the coping mechanisms on the challenges experienced by CCJE students in online class during pandemic?

METHODOLOGY

Research design

Phenomenological qualitative research approach was employed to understand and describe the universal essence of a phenomenon since the study investigated the everyday experiences of human beings- the BS Criminology students during the pandemic, while suspending the researchers' preconceived assumptions about the phenomenon.

Population and Locale of the Study

The researchers used quota sampling wherein 5% of individuals in every year level of the College of Criminal Justice Education students of the Cagayan State University- Sanchez Mira were taken as the population of the study. The researchers gathered information through focused group discussion in which they interviewed the respondents in one place for every year level. The discussion was recorded via phone and they also used an interview guide to gather information.

Data Gathering Tools

The instrument used for this research is an interview guide that requests specific information from the participants, developed by the researchers. The interview guide asked the students to answer by identifying their name, but it was optional, gender, and year level. The researchers requested them to answer the interview guide provided. The data collected were completely based on the student's answers. The accuracy of the data used is based on the accuracy and honesty of the student's answers who participated in this study.

Data Gathering Procedures

The researchers followed the standard procedures in conducting this research through a formal letter request to the respective person in charge, permission was secured to conduct the study from the Campus Executive Officer and the College dean.

Data Analysis

The recorded interview was interpreted and for confidentiality, the researchers secured the identity of the participants. To answer the specific questions raised in the statement, the data gathered from the interview guide were analyzed.

The data gathered from the interview guide were analyzed by means of transcribing the recorded information into written form. Upon transcribing the data, the researchers translated the Tagalog and Ilocano words to English terms. Researchers collected only the significant answers from the respondents, and they interpret information. For every interpretation, there is an implication and they incorporate it with other studies.

RESULTS AND DISCUSSION

The Challenges Experienced by Students Amidst Covid-19

It can be gleaned from the table that the most common challenges experienced by the students on online class during pandemic are treatment of socialization/communication, inconsiderate teachers, noise, connectivity and gadgets, finances. The findings revealed that these problems display distressing conditions of the participants.

Challenges on Inconsiderate Teachers. Teachers must be the reason for students to understand the lesson and students need them especially during this pandemic. Inconsiderate teachers will only cause trouble to a student especially when no one else can help a student. A theory explained that online teaching remains largely didactic, assessment of student work is often trivial, and curricula are more likely to emphasize content coverage than acquisition of lifelong and life-wide learning skills.

According to participant 5, some stated that *"sa una, noong simula palang ng klase Hindi mahirap pakisamahan ang mga guro sa CSU- Sanchez Mira. Sa una, nagrereply sila but in terms of network problems or internet problems dinedisregard ng mga ibang guro ang mga explanation ng mga estudyante, probably, they ignore sometimes the valid reasons of the students, kung bakit minsan di nakakaattend sa online class"* (At first, at the beginning of the class, the teachers at CSU-Sanchez Mira were not difficult to get along with. First, they replied, but in terms of network problems, other teachers ignored the student's explanations, probably, they ignore sometimes the valid reasons of the students, why

sometimes not attend the online class). Furthermore, participant 7 stated that *"Napansin ko sa ilan kong mga guro ay abala sila kaya minsan di nila napapansin yung mga alalahanin naming tungkol sa mga paksa namin"* (I notice that some of my teachers are so busy sometimes they don't notice our concerns about our topics). It implies that problems to inconsiderate and cannot be communicated teachers can lead to insufficient understanding on the topics.

The finding corroborates with the study of Fauzi et al. (2020), demonstrated that students experience a variety of problems during the Covid-19 pandemic such as lack of opportunities in online learning applications, network and internet use, inconsiderate teachers, implementation and evaluation and collaboration with parents.

<u>Challenge on Noise</u>. Noise means a sound, especially one that is loud or unpleasant or that causes disturbance. Noise disrupts the online session and reduces the overall quality of the class and experience of the participants. Undeniably the students had to stay in their homes during the pandemic and for that reason, they can't avoid from being called from their parents in doing such work and they get distracted from the noises in their surroundings.

In accordance with the statement of participant 9, states that, *"Ngayong panahon ng pandemya, nakakaranas tayo ng ilang problema sa ating tahanan katulad nung mga ingay ng sasakyan na dumadaan sa kalsada at yung mga ingay nung mga alagang hayop."* (In this time of pandemic, we encounter some problems in our home such as the noises of vehicles passing on the road and the noises of pets). Likewise, on the answer of participant number 11, he stated that *"In this time of pandemic we encounter some problems in our home katulad nung mga ingay ng sasakyan na dumadaan sa kalsada at yung mga ingay nung mga alagang hayop."* (In this time of pandemic, we encounter some problems in our home such as the noises of cars passing on the road and the noises of pets). This study implies that students cannot focus and cannot understand their lesson well on noisy surroundings.

Moreover, the findings of this study affirmed the study of (Lane, 2009; Hagler, 1999) evaluated the impact of noise pollution in the learning environment on student-participant's cognitive performances, assessed the intensity of background noises in their classrooms and homes and identified the primary source of the noises.

<u>Challenges on Technology</u>. Students without internet can't connect with teachers or classmates, do independent research, or get online homework help. One of the biggest problems faced by students without internet access at home is their inability to complete homework and communicate with their family and friends. The use of gadgets during pandemic in virtual class is essential to students. But in reality, some students can't afford to obtain gadgets (laptop, smartphones, applications) and they tend to borrow gadgets for them to attend their virtual classes. The connectivity is also important to all students who are using online flat forms.

Surprisingly in the same manner participant 6 claimed that, "As a student we can't avoid some problems on our gadgets especially when we use it in some online games and in online class. I encounter some lag, hang and lac of internet." Additionally, participant 10 stated that *"Internet ang pangunahing problema interms of technological problems dahil wala kaming internet sa aming lugar, kasi kahit may cellphone kung walang internet hindi ka makakapag-aral, since online class is one of the new ways of learning."* (Internet is the main problem in terms of technological problems because we don't have internet in our area, because even with cellphone without internet you can't study since online class is one of the new ways of learning.) This result implies that the problem on connection and gadgets is forcing students to stop studying and the richer ones will go somewhere with signal.

The findings related to the statement of Maillizar et al. (2020) said that lack of knowledge, skills and devices, internet connection, irrelevance and issues with system access were the problems experienced by teachers and students in the Covid-19 pandemic. This study is connected to the statement of respondent 12 who stated that, "when it comes about gadgets, I don't have any problem the problem is my internet connection." Similarly, Apriyanti (2020) stated that lack of internet access and digital tools in villages or rural areas was a barrier to online courses.

<u>Challenges on Finances</u>. Finances is concerned with the management, planning, and study of money, which is necessary for one's living. It is known that financial problem is one of the challenges of the students during the pandemic. Some students say that they lack supplies, no internet connection or poor signal. Some of the students were lazy and out of motivation in doing school activities.

Notably, to participant 3, stated that *"Para sakin, ang problema ko bilang isang mag-aaral ay hindi natin maiiwasan ang ilang pagkawala ng ating signal at pati na rin ang kakulangan ko ng mga gamit sa paaralan dahil wala tayong maraming pera"* (For me, my problem as a student is that we can't avoid some loss of our signal and also that I have lack of school supplies because we don't have lot of money)*.*

This statement is in line with participant number 12 who claimed that "For me, my problem as a student, we can't avoid some loss of our signal and also that I have lack of school supplies because we don't have lot of money." This condition implies that problems on financial will lead to lesser number of students. Due to limited income, students prefer to work instead of studying.

Financial means pertaining to monetary receipts and expenditures, pertaining or relating to money matters, pecuniary, financial operations. Poor budgeting is one of the most common causes of financial problems. It was reflected from the study that many students today are worrying about debts or student loans, application fees, rental housing fees, books, study materials (Gutiérrez, 2020). Moreover, some of them have started to find other initiatives to support their studies by exploring freelancing opportunities, looking for jobs in high demand during this period and more.

Table 1. Challenges Experienced by Students Amidst Covid-19

Superordinate Themes	Subordinate Themes	Significant Statements
The Challenges Experienced by Students Amidst Covid-19	Inconsiderate Teachers	"Sa una, noong simula palang ng klase hindi mahirap pakisamahan ang mga guro sa CSU- Sanchez Mira, una't-una, nagrereply sila but in terms of network problems or internet problems dinedisregard ng mga ibang guro ang mga explanation ng mga estudyante, probably, they ignore sometimes the valid reasons of the students, kung bakit minsan di nakakaattend sa online class." (Participant 5) "For me, sometimes I encounter some problems on our teacher like lack of explanation about the topic and also, they lack consideration." (Participant 8) "Some of our teachers are not considering some of our concerns as students. They only mend what they believe and stand to their high quality." (Participant 12)
	Noise	"Palaging inuutusan at nag -aaway ang magulang dahil sa kakulangan ng budget sa bahay, maingay." (Participant 2) "In this time of pandemic, we encounter some problems in our home katulad nung mga ingay ng sasakyan na dumadaan sa kalsada at yung mga ingay nung mga alagang hayop." (Participant 11) "Ngayong panahon ng pandemya, nakakaranas tayo ng ilang problema sa ating tahanan katulad nung mga ingay ng sasakyan na dumadaan sa kalsada at yung mga ingay nung mga alagang hayop." (Participant 9)
	Technology	"As a student we can't avoid some problems on our gadgets especially when we use it in some online games and in online classes, I encounter some lag, hang and lack of internet." (Participant 6) "Internet ang pangunahing problema interms of technological problems dahil wala kaming internet sa aming lugar, kasi kahit may cellphone kung walang internet hindi ka makakapag-aral since online class is one of the new ways of learning." (Participant 10) "When it comes about gadgets, I don't have any problem except my internet connection." (Participant 8) "Lack of gadgets and problem on signal, also, yung mga new apps for virtual meetings nahirapan din mag-adjust." (Participant 12)
	Finances	"For me, my problem as a student is that we can't avoid some loss of our signal and also that I have lack of school supplies because we don't have lot of money." (Participant 12) "Para sakin, ang problema ko bilang isang mag-aaral ay hindi natin maiiwasan ang ilang pagkawala ng ating signal at pati na rin ang

		kakulangan ko ng mga gamit sa paaralan dahil wala tayong maraming pera" (Participant 3) "Bilang isang studyante minsan ang problema ko ay tinatamad akong gawin ang mga activities ko agad, kaya sa bandang huli nagru-rush akong gumawa. My problem also as student is financial." (Participant 5) "Tiyaga at sipag ang kailangan sa pag-aaral, but seeing behind these sacrifices you need to take, financial problems as the utmost problem. itoy marahil pinanganak ito sa mahirap na pamilya. Furthermore, mahirap malayo sa mga magulang or pamilya at most of all ang internet na kakailanganin para makapagattend ng online class." (Participant 1)

Coping Mechanisms on the Challenges Experienced by CCJE Students in Online Class during Pandemic

Avoidance, positivity, and adjustment are the identified coping mechanisms used by the criminology students in online classes during the pandemic.

It can be gleaned from the table that the coping mechanism on the challenges of online class during pandemic are looking for a peaceful environment, having positive mind and adjusting yourself to a new normal. The findings revealed that these coping mechanism shows a positive effect to the participants especially in dealing with the online class during pandemic.

Coping Mechanism on Noise. Noise can be defined as sound that disrupt or interfere the surroundings which disturb one's hearing of something. Online class during pandemic is observed in their respective houses of some students, therefore, it is obvious that noise interference is present, that it is difficult for students to obtain important knowledge to their lessons.

Environment is important to a student. Having a peaceful environment will lead to a good understanding of the lessons learned. The coping mechanism used by the students to noise is Adjustment. In the sense that there is alteration or movement made by the participant to achieve the desired ease of ambience in studying and it may avoid disturbances. The findings were proven by the statement of participant 4 stated that, "For me, I overcome my problems as a student and home schooling by going to places that have no noises." This implies that the study on coping mechanism to noisy environment is going to a quiet place where in students can focus with their studies.

Similar with the findings of study of Appel-Meulenbroek (2021), disclosed that when coping with noise, people are most inclined to either "Make

even a greater effort" or "Discuss the noise problem with colleagues," despite the expectation that this does not have a major positive effect on their productivity. Also, Mazo (2015) claims that the stress coping mechanism of Political Science students was listening to music. This indicates that they find comfort and consolation in music when they are under stress. Noteworthy is the fact that they would never turn to the use of illegal drugs even when they experience stress.

Coping Mechanisms on Inconsiderate Teachers. Teacher's negative behavior can affect both sides especially to students who may encounter negative impact to their learning abilities. Progressing in learning academics and in every aspect of life. The findings show that adjusting with the attitude of teachers is one of the coping mechanisms of students to online class during pandemic.

Coping mechanism of Avoidance was used by participant 3. The situation of being isolated by students can establish the focus on studying in online class during pandemic. On the other hand, adjustment is applied by participant 6 as coping mechanism, wherein, spoon-fed learning is set aside for students come up with their lessons and making a way to adjust in places which learning is convenient during pandemic. According to participant 6, he revealed that, *"Bilang mag-aaral kailangan parin naming mag adjust at mag hintay sa responce nila kahit late na nila nasasagot ang tanong mo."* (As students we still need to adjust and wait for their response even if they are late in answering your question).

Similarly, participant 3 states that "*bilang isang mag-aaral kailangan paring mag-adjust at magsacrifice for a brigther tomorrow. hence, nag-adjust ako, syempre kailangan lumayo sa pamilya upang makapag- aral thru online class."* (As a student you still need to adjust and sacrifice for a brighter tomorrow, hence, I adjusted, of course I had to stay away from my family to study through online class). As determined in the statement of participant

3, it shows that the coping mechanism used is Adjustment which made the participant adjust its own situation to gain a more desired outcome in studying in online class; a coping mechanism of Positivity\Resilient was also used, seemingly, the participant portrays the ability of being optimistic in studying in online class as to overcome challenges on its own. This study implies that adjustment is a need in order to deal with teachers who are not approachable or inconsiderate.

According to Lazarus and Folkman (1984), the way a person appraises situations determines both stress reactions and coping efforts. Consistent with prediction, the relation of a particular coping strategy to adherence was dependent on the nature of the stressor.

The findings relate to the study of Mazo (2015), stating that the common causes of stress among students taking BSSW were teachers related. It can be noted that teachers are among the school related stressors among students. As to the causes of academic stress, most of the students are having difficulty in dealing with teachers (Austria-Cruz, 2019).

Coping Mechanism on Technology. Technology refers to the equipment developed for practical purposes also it affects the way individuals communicate, learn and think. Technology (internet and cellphones) plays an important role in lives of students as well as teachers, the study divulged that as a pandemic spread around the world, internet connection became essential to every student.

Under the statement of one of the students stated that, **"**ako mismo ang nag-adjust nagboarding ako sa mga lugar na may internet upang makaattend ng online class and of course bumili ng bagong cellphone para at least mabawasan ang problema." (I adjusted myself, I boarded in places with internet to be able to attend online class and of course bought a new cellphone to atleast reduce the problem). The coping mechanism used is adjustment is moving in places where internet connection is available to attend online classes, thus, effort is truly needed in part of adjustment.

This is also true with the statement of participant 10, stating that "humiram ka ng kailangan tapos alamin yung mga kailangan malaman about gadgets by viewing videos sa internet or tanong tanong lang" (Borrow what you need and then find out what you need to know about gadgets by viewing videos on the internet or just asking questions). Adjustment is applied by borrowing what is necessary and acquiring more ideas as to how to manipulate gadgets which may be used in online learning. This study implies that as student, you need

to make a remedy in any challenges to online class during Covid-19 so that you will not be left behind.

The Internet is a technical means of connecting people. It provides an easy way for individuals as well as groups and organizations to adopt peer-to-peer communication. This statement is in line with the study of Culnan & Markus (1987) pointed out that computer-mediated communication networks could create communities based on interest 'rather than by geography, social position and prior acquaintance' (p. 34). On the other hand, LEEP students report that it takes 'more effort' to make and sustain relationships online, and to 'remain visible' in the online environment (Haythornthwaite et al. 2000; Bregman and Haythornthwaite 2003). Thus, a second impact of changes in media is to remove weak tie connections. Growth of ties between students should not be considered in terms of moving offline from online. Instead, they should be considered as going from public to private via whatever means support that interaction.

Coping Mechanism on Finances. Finance is the process of channeling or management funds which is needed in everyday lives. Online class does need source of funds to persist in activity of every student. The findings reveal that students require financial assistance in online class during Covid-19. Positivity was used as coping mechanism by being financially stable while studying will not be a problem. Being optimistic is a way that a student could continue and pursue his\her goal. The statement is related to participant 6 statement, stated that "Ang pagkakaroon ng magandang pinancial is an indication na may chance kang makakapag tapos sa pag aaral. Kapag lack of budget ka naman dapat may roon kang positive mind." (Having a financial performance is an indication that you have a chance to finish school. When you lack a budget, you must have a positive mind.).

This was justified to a statement of participant 7 who affirmed that, "I overcome my problems by going to work so that I have a money to buy some school supplies." In the statement of participant 7, adjustment is the coping mechanism applied. Studying while working is a gainful step to sustain financial needs to students who is financially incapable. This implies that being optimistic and making a way to every problem, you can expect that good things will happen to you.

Financial stress is a common problem affecting every student to some degree. There are various ways to come out of such difficulties that can assist an individual to grip his financial condition and feel more in control of his life (Marks, G, 2007). Similar with the study of Davidson et al. (2011), which emphasized that "financial stress is heavily correlated with poor money management skills, with

a very direct relationship between the degree of financial stress someone faces and their ability to manage their expenses. As a student they should know the steps to overcome your financial stress. You must include evaluating your relationship with money and seeking outside help.

Table 2. Coping Mechanisms on The Challenges Experienced by CCJE Students in Online Class During Pandemic

Superordinate Themes	Subordinate Themes	Significant Statements
What are coping mechanisms on the challenges experienced by CCJE students in online class during pandemic?	Avoidance	"For me, I overcome my problems as a student and having home schooling by going to places that have no noise." (Participant 4) "Pumunta sa isang lugar na hindi maingay." (Participant 10)
	Positivity /Resilient	"They always tell me that it is just a challenge to us as a learner, so I encourage myself that it is just a part of my life as a learner." (Participant 7) "Patience lang para sa mahirap makonta and sa hindi masyado nagdiscuss, bawi ko nalang sa pagbabasa at paglalaro sa kaklase." (Participant 1) "Syempre, kinakailangan paring magtiyaga at magsikap upang malampasan ang mga ganoong problema." (Participant 5)
	Adjustment	"Bilang mag-aaral kailangan parin naming mag adjust at mag hintay sa responce nila kahit late na nila nasasagot ang tanong mo." (Participant 6) "Kailangan mag-adjust at magsacrifice for a brigther tomorrow. Hence, nag-adjust ako, syempre kailangan lumayo sa pamilya upang makapag- aral thru online class." (Participant 3)

CONCLUSIONS

It is concluded that the faculty members teaching the criminology students in the College of Criminal Justice Education (CCJE) are strict to their students in the conduct of their classes during the pandemic. It is very crucial on the part of the students since there were other factors which were identified to affect their studies during the pandemic such as sound solution, internet connectivity and financial capability of these learners.

Avoidance, positivity and adjustment are some of the coping mechanisms adopted by these students in online classes during the pandemic.

RECOMMENDATIONS

1. The faculty members/teachers may consider the following: (i) establish content and digital learning objectives; (ii) incorporate friendly environment in online flat form, (iii) facilitate student-content engagement interactive instructional materials.
2. The students are encouraged to establish effective study habits during pandemic and when face to face classes is not observed.
3. The teachers, students as well as parents need to cooperate to attain the benefit of the coping mechanisms presented.

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DESIGN, FABRICATION, AND TESTING OF FIRE ALARM SYSTEM USING ARDUINO WITH SMS AND CALL

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ABSTRACT

Fire safety is of paramount importance in both residential and commercial settings. To enhance fire detection and notification systems, this research project was conceptualized focusing on the design, fabrication, and testing of an advanced fire alarm system employing Arduino technology, integrated with SMS and call notifications. The core of this system is an Arduino microcontroller, which processes data from various sensors. The fabrication process involves the assembly of the hardware components, which include the Arduino board, GSM module, sensors, and a user interface for manual override and configuration. The testing phase of the system focused on assessing its sensitivity, responsiveness, and overall reliability. The results indicate that the Arduino-based fire alarm system offers a highly effective and timely response to fire incidents. It has the potential to significantly reduce response times, thereby minimizing property damage and saving lives. The integration of SMS and call notifications ensures that users are promptly informed, even in cases of network disconnection or power failure. In conclusion, the design, fabrication, and testing of this Fire Alarm System using Arduino with SMS and call notifications represents a significant step forward in the field of fire safety technology. Its affordability and reliability make it a valuable addition to fire safety measures for both residential and commercial environments, contributing to the goal of mitigating fire-related risks and ensuring the safety of occupants.

Keywords: automated file alarm system, Arduino, fire safety, GSM module, sensor

INTRODUCTION

Fire is one of the tragedies that cannot be predicted. Besides being unwanted, it is also often uncontrollable when the fire spreads. Fire incidents are hazardous and disrupt people's lives and livelihoods. Fire is categorized as a form of disaster. According to the National Disaster Management Agency (BNPB) in Indonesia, a disaster is a series of cases that threatens and disrupts people's lives and livelihoods caused by natural factors, non-natural factors, or human factors, resulting in loss of life, environmental damage, property loss, and psychological impact (Ahrens, M. 2016).

Delay in coping with fires can cause loss of human life or materials. Most of the fire cases occurred in residential houses. A house is an object that is vulnerable to fire because of its kind of activities. Human safety is an essential factor that must be taken into account and prioritized in a house fire. Therefore, residents of houses affected by disasters must receive information in the form of early warnings when a fire happens so that they can be evacuated independently. Information about the fire location is necessary to provide information to the fire department for easier access to the fire location and prevent more significant losses (Azmil, M. S. 2015).

The increasing number of residential houses, where houses are close to each other, will be more challenging to handle in a fire tragedy. A fire that occurs in a house will quickly spread to all elements of the house. House owners will identify the fire when it starts to spread, so there will be less time to rescue the human or house materials. The antecedent of the fire comes from various factors such as electric short circuits and others. For this reason, it is necessary to carry out handling efforts that can provide more information to house owners and firefighters so worthy action could be taken immediately as not to impact more significant losses (Garfinkel, S., & Holtzman, H. 2005).

Many types of research on fire detection systems using IoT have been carried out. In 2017, "Research on the Design of an IoT-Based Fire Detection System and an SMS Gateway Using Arduino", which was applied to prevent forest fires, has been researched by the authors of, and the results of this research aid officers in identifying the real-time conditions that occur in the forest (Arduino 2012).

"Simulation of a Room Pollution Detection System Using Smoke Sensors With Notifications Via SMS (Short Message Service) and Arduino-Based Alarms" has further been carried out by the authors of using a SIM900 modem. It is intended to send and receive SMS communications to users in a report on detection results using the AT-Command protocol by the GSM network. In 2018, research on "LPG Tube Leak Detection Through an SMS Gateway Using an Arduino Uno-Based MQ2 Sensor" was implemented, and the research outcomes are that the MQ2 sensor

is connected to an Arduino board to monitor LPG gas and cigarette smoke. However, gas detection is not based on the distance of identified gasses but the level of gas content. The thicker the gas, the faster it will be identified. The use of sensors to interpret temperature and humidity has been investigated in with a prototype model, although their research did not reveal how information messages are processed and sent using short messages (Ahrens M. 2016) .

The GSM Module is responsible for the communication part of the circuit. It takes information from the Arduino on where to send information and what information needs to be sent. It uses a GSM SIM card for communication purposes. It is basically just a modem which uses serial communication to interface with and needs Hayes compatible AT commands for communicating with the Arduino. The alert message and the phone number of the recipient are given by the user through the project codes. As soon as fire is detected (temperature will hit certain temperature limit) an SMS will be sent to the recipient' phone number from the SIM card inserted into the module for giving information to the user upon fire detection in the house (Bieman, J. 2006) .

Therefore, this study is composed of a system using an Arduino microcontroller, an open-source electronic board. Arduino consists of the main components, particularly the ATMega 328 microcontroller. This board works according to the program flow that is uploaded to the board. This design also uses the MQ2 sensor, which is used to identify smoke, gas, and other things. The DS18B20 sensor is also used to measure the temperature in a room. The short message-based fire detector uses another device in the form of a GSM shield module. This device installed in the house and assists in sending messages that house owners and firefighters will receive to carry out an early evacuation immediately.

Objectives of the Study

Generally, this study aimed to develop a fire alarm system using Arduino with SMS and call. Specifically, the study aimed to:

1. design a Fire alarm system using
2. Arduino with SMS and call
3. Fabricate a fire alarm system using
4. Test the fire alarm system using Arduino with SMS and call

In terms of:
1. Effectiveness in sending and
2. calling the BFP hotline number.
3. acceptability of the Fire Alarm System using Arduino with SMS and call.
4. cost of production

METHODOLOGY

Research Design

This study used experimental design. It tested the effectiveness of the device in notifying the Bureau of Fire Protection by sending messages and call in the cellphone hotline number of the said agency. It also determined the acceptability of the device by acceptability evaluation.

Assembly Procedures

Assembly procedure presents the steps of every stage in assembling the Fire Alarm System using Arduino with SMS and call.

Device Design

Figure 1. Flowchart of the study
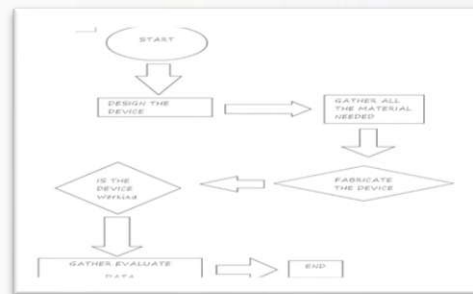
Figure 2. Isometric view of the device

Figure 3. The major components of the device
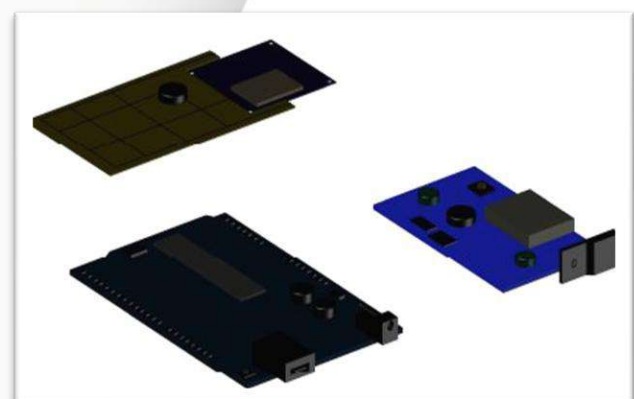
Figure 4. The exploded view of the device
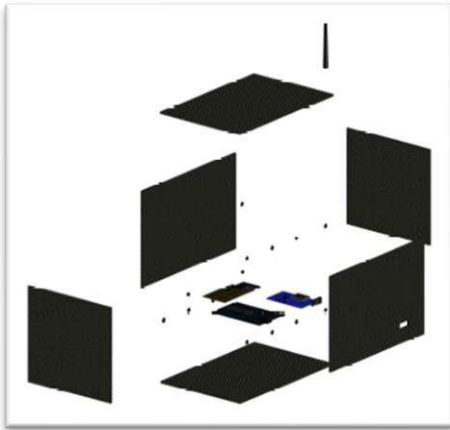
Figure 5. The schematic diagram of the device
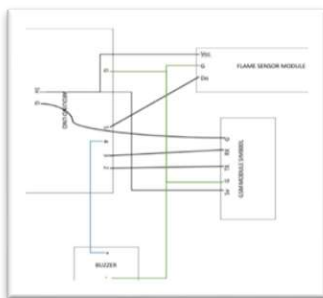
SCHEMATIC DIAGRAM

A.) The process of assembling

The assembling procedure is the steps on how the Fire alarm system using Arduino with SMS and call was being assembled until the end of its development.

STEPS/PROCEDURE

1. Gather all the materials that are needed.

2. Prepare all the materials on making the fire alarm system.

3. Cut the fiber glass to the required dimensions of of the box of fire alarm system.

4. Make a box using fiber glass.

5. Prepare the code of the system and upload the code to the Arduino r3.
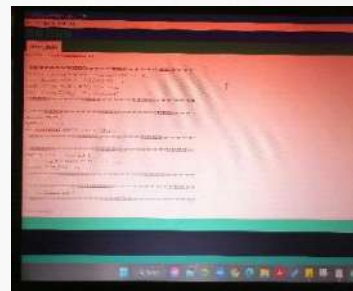
6. Connect the wires based on the schematic diagram.

7. Check the connection for problem.

8. Test the Fire alarm system.

B. Testing and procedures
The effectiveness of the device was tested if the device notify the Bureau of Fire Protection by sending the home address of the house where the fire is detected and calling the BFP cellphone hotline number.

RESULTS AND DISCUSSION

A. Description of the fabricated Fire Alarm System using arduino
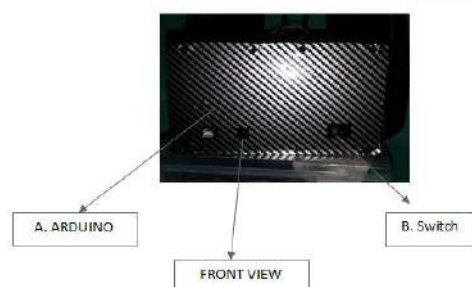
A. Arduino Uno- The Arduino Uno is one kind of microcontroller board based on ATmega328, and Uno is an Italian term which means one.

B. Switch- An electric switch is a device – usually electromechanical – used to open and close an electric circuit. This disables and enables the flow of electric current, respectively

C. Flame sensor - flame detector is a type of sensor that can detect and respond to the presence of a flame. These detectors have the ability to identify smokeless liquid and smoke that can create open fire. For example, in boiler furnaces flame detectors are widely used, as a flame detector can detect heat, smoke, and fire.

D. GSM module- This module is able to receive serial data from radiation monitoring devices such as survey meter or area monitor and transmit the data as text SMS to a host server.

E. Buzzer- Typical uses of buzzers and beepers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke.

Characteristics	Mean	Descriptive Value
Acceptability	4.52	Highly Acceptable

F. Dc to dc buck converter- that efficiently converts a high voltage to a low voltage efficiently. Efficient power conversion extends battery life, reduces heat, and allows for smaller gadgets to be built. The buck converter can be used in lots of cool applications.

Testing of the Fire Alarm System using Arduino with SMS
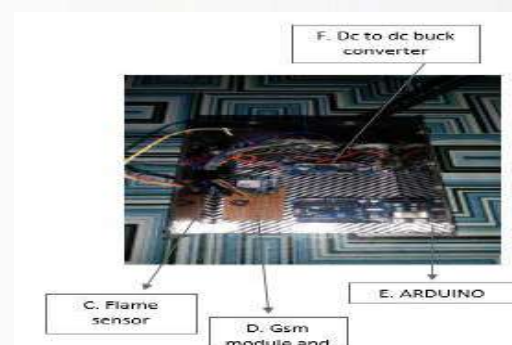
The device was tested on how fast the message is sent to BFP hotline number and call when the device senses a fire. the result in message is have weighted mean of 5.84 second and for the call is have weighted mean of 6.61 seconds as shown in table 2.

Table 2.0 Testing of the Fire Alarm System using Arduino with SMS

TESTING	TRIAL 1	TRIAL 2	TRIAL 3	MEAN
SECONDS ON RECEIVING MESSAGE	5.44	3.54	8.55	5.84
SECONDS ON RECEIVING CALL	6.23	4.5	9.11	6.61

Acceptability the fire alarm system using Arduino with SMS.

The researchers also determine its acceptability by users through acceptability evaluation, and the result for its acceptability is a weighted mean of 4.52 and a descriptive value of Highly Acceptable as shown in Table 3.

Table 3.0. Acceptability the fire alarm system using Arduino with SMS.

Cost of Production

The total cost for the materials used is 3,482 pesos as reflected in the table. The cost for labor is estimated at 3,000 pesos. Generally, the gadget developed is to be sold in the market at 8, 426 pesos.

Table 4.0 Cost of Production

PARTS NUMBER	UNIT	DESCRIPTION OF PARTS	UNIT COST	TOTAL
1	1	ARDUINO	1500	1500
2	1	DC-DC BUCK CONVERTER	106	140
3	1	5V BUZZER	90	90
4	2	FLAME SENSOR	154	308
5	1	SWITCH	20	20
6	1	12V FEMALE PLUG	55	55
7	1	GSM MODULE	439	439
8	2	CARBON STICKER	200	400
9	4(8X4.5)2(4.5X4.5)	FIBER GLASS	500	500
10	1	CUTTING DISC	30	30
				3,482
LABOR: **P3000**				
SELLING PRICE:**P8, 426**				

CONCLUSION

Based on the findings, the fabricated Fire alarm system using Arduino with SMS and call can notify the BFP by sending the home address of the household via SMS and by calling the hotline number. Through this technology, it can make the BFP respond earlier for prevention of fire in order to minimize causalities during fire incident.

RECOMMENDATIONS

1. More extensive research on the different stages of the device for faster sending of SMS and call to BFP is to be conducted.
2. A Long range of sensor should be used for accurate detection of fire.
3. **Parallel studies should be conducted to improve the functionality of the said device.**

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LEVEL OF AWARENESS AND EXTENT OF USE OF GENDER-NEUTRAL LANGUAGE AMONG FOURTH YEAR STUDENTS OF THE CTED AT CSU-SM

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ABSTRACT

The study investigated the level of awareness and extent of use of gender-neutral language among fourth-year CTED (College of Teacher Education) students at Cagayan State University-Sanchez Mira. It acknowledged the challenges associated with gender research in schools due to its personal and political nature, leading to a lack of research in gender-neutral language in classrooms. The study utilized a descriptive-correlational design and involved 104 respondents, predominantly female. The main data collection tool was a questionnaire. Statistical analysis, including frequency count, percentage, mean and weighted mean, chi-square test, and Pearson product-moment correlation, was employed. The findings indicated that most respondents demonstrated general awareness of gender-neutral language and frequently used it. Seminars or training sessions related to gender and development were found to have a significant impact on increasing awareness of gender-neutral language. Additionally, the extent of use of gender-neutral language varied based on students' sex, indicating a significant relationship. As a result, the null hypothesis, was partially rejected. Furthermore, the study concluded that increasing awareness through gender-focused seminars and training sessions positively influenced students' usage of gender-neutral language. It emphasized the importance of implementing such interventions to enhance awareness among students and highlighted the role of sex in language usage patterns. Thus, the study shed light on the significance of addressing gender-neutral language in educational settings and provided insights into the potential impact of training and awareness-raising initiatives.

Keywords: extent of use of gender-neutral language, gender-focused seminars, gender-neutral language, language usage patterns, level of awareness,

INTRODUCTION

Gender is a notion that is always present in our daily life. It appears to be natural because it is so clearly manifested in our beliefs, actions, and desires. Gender has a plethora of ideas and ideals. It affects everything from men's and women's sense of humor to their interests, food preferences, and even how they drive a car (Eckert & McConnel-Ginet 2013, p. 1). Gender, however, is not a biological construct. It is not something we are born with, but rather something we practice and reinforce on a daily basis (Butler 1990). As a result, it is critical to question how gender influences our lives and the effects on social structures and institutions rather than viewing it as a given part of society.

Gender research in schools is a difficult advent due to its personal and political nature. As a result, there is a lack of research examining the potential of gender-neutral language in the classroom. Consequently, this study focused on determining the level of awareness on gender-neutral language among fourth-year College of Teacher Education students of Cagayan State University-Sanchez Mira, Academic Year 2022-2023.

Although other different definitions of gender-neutral language exist, this study focused on its most common type specifically what is called "identity markers," such as how one refers to professions and significant others. This includes the use of the term's "congressmen" refers to all members of Congress, "fireman" to all who tend a furnace or fire, and "salesman" is defined by the dictionary as a man whose job involves selling products or services. These words contain an unconscious bias towards one's mindset or Meanwhile, the conceptual framework of this study as shown in the paradigm that follows revolved around the idea that the profile of the fourth-year students of CTED which include sex, field of specialization, and the trainings/seminars they attended in relation to gender development could affect their level of awareness and extent of use of gender-neutral language which is the dependent variable.

Students who identify as LGBTQ or gender-queer may be most directly affected by a gendered language discourse in the classroom. It is especially

difficult to collect data from students who identify as queer because sexuality is considered a personal and sensitive topic. Nonetheless, critical thinking about gendered language is increasing in classrooms throughout the region. At CSU, there has been a growing emphasis on creating safe environments. The use of gender-fair language is being consistently advocated in the Judiciary through seminars and modules. Meanwhile, CSU-SM has begun encouraging teachers to inquire about their student's preferred pronouns. Students who identify as queer may appreciate being asked about their "partner," "significant other," or "sweetheart," all of which are gender-neutral terms, rather than their "boyfriend" or "girlfriend."

Another aspect of gendered language that can also affect students is linguistic reminders of their perceived genders and the gender norms that go with them. When students are asked to draw on emotions and personal experiences, more masculine-identified students may feel the pressure not to participate due to the expectation that masculine people are stoic. To achieve active engagement and interaction in the classroom, it would then be necessary to eliminate gender norms in the classroom and encourage critical consciousness about gender stereotypes in all students.

Since no research has been done on the knowledge of students about gender-neutral language, the researchers chose this topic. This is to help the university in the application of gender-neutral language in promoting gender equality and to avoid word choices that may result in bias, discrimination, and degrading remarks by implying that one sex or social gender is the norm.

Objective of the Study

Generally, this study aimed to determine the level of awareness and extent of use of gender-neutral language among fourth year students of the College of Teacher Education at CSU- Sanchez Mira.

METHODOLOGY

Research Design

The descriptive-correlational design was used in this study. This design helped the researchers to describe the level of awareness and extent of use of gender-neutral language among fourth year students of the College of Teacher Education at Cagayan State University – Sanchez Mira. It likewise described the relationship between the profile of the fourth-year students and their level of awareness and extent of use of gender-neutral language.

Research Locale

The study was conducted in Cagayan State University – Sanchez Mira at Centro – 2, Sanchez Mira, Cagayan. CSU-Sanchez Mira is one of the satellite campuses of the Cagayan State University situated 1.5 kilometers east of the town proper. CSU is one of the public Higher Education Institutions (HEIs) in the Northern part of the Philippines.

The study was particularly conducted at the College of Teacher Education Sanchez Mira campus. The College of Teacher education is one of the eight colleges of CSU – Sanchez Mira, CTED offers the following courses: Bachelor of Secondary Education (BSE) English, BSE Mathematics, BSE Filipino, BSE General Science, and Bachelor of Elementary Education (BEED).

Research Respondents

The respondents of this study were the fourth-year students of the CTED in CSU, Sanchez Mira, Cagayan for the A.Y. 2022-2023. Since the population of the fourth year CTED students is manageable, complete enumeration was used in the study.

Research Instrument

The questionnaire was the principal instrument used in gathering the needed data. The questionnaire intended for the fourth year CTED students consists of three parts. Part I deals with the personal profile of the students which includes the sex, field of specialization, and the training/seminars related to Gender and Development (GAD) they attended. Part II will assess their vocabulary level on gender-neutral language. Part III indicated the extent to which they use gender-neutral language in different contexts. The five-point Likert Scale was used to rate the indicators: 5 – Always, 4 – Often, 3 – Occasionally, 2 – Rarely, and 1 – Not at all.

The questionnaire was self-constructed and validated by qualified experts in GAD.

Statistical Treatment

The data gathered from the respondents was analyzed and tabulated for the purpose of interpretation and analysis.

Frequency counts and percentage distribution were used in treating the profile of the students.

RESULTS AND DISCUSSION

Profile of the Respondents

Table 1 shows the distribution of respondents in terms of sex. The table reveals that there were 20 male students, accounting for 19.23% of the total, while there were 84 female students, representing 80.77% of the total. This indicates a significant majority of female students in the group. This is supported by the enrollment data of the college that there are more female enrollees as compared to males.

Moreover, these findings are also supported by the findings of 2008 Functional Literacy, Education and Mass Media Survey (FLEMMS) on the statistics on Filipino women and men's education which reported that school attendance was higher among females than males. As exhibited in the data, it can be deduced that the College of Teacher Education are predominantly females. This finding means that majority of those who took teaching course are females. This finding establishes the validity of the finding of a previous researcher Acidera (2015) as he found out that teaching is a female dominated course.

Table 1. Frequency distribution of the students in terms of sex

Sex	Number of Students	Percentage
Male	20	19.23
Female	84	80.77

Table 2 shows the distribution of respondents in terms of field of specialization. The largest group was BEED with 30 students making up 28.85% of the total, BSE-ENG had 25 students (24.04%), BSE-FIL had 23 students (22.12%), BSE-GEN SCI had 16 students (15.38%), and BSE-MATH had 10 students (9.62%). All in all, there are 74 BSED students. As shown in the data, it can be concluded that the fourth-year students of the College of Teacher Education are mostly BSED students.

Table 2. Frequency distribution of the students in terms of field of specialization

Field of Specialization	Number of Students	Percentage
BSE-ENG	25	24.04
BSE-FIL	23	22.12
BSE-GEN SCI	16	15.38
BSE- MATH	10	9.62
BEED	30	28.85
TOTAL	104	100%

Table 3 shows the distribution of respondents in terms of related trainings/ seminars attended on gender and development. The table reveals that 89 students (85.58%) attended Gender and Development (GAD) sessions. A smaller number of students, 9 (8.65%), attended seminars on the Magna Carta for Women/VAWC, and an even smaller group of 6 students (5.77%) participated in the Women's Month Celebration.

Meanwhile, a substantial portion of the students attended trainings/seminars on gender and development, particularly the GAD sessions.

These findings imply that the College of Teacher Education sets and integrates gender sensitivity with the academic disciplines catered compliant to the Philippine Commission on Women (PCW) Sec. 16 which mandates the Commission on Higher Education (CHED) to develop and promote gender-sensitive curriculum. This is because gender fair language is integrated in language lessons specifically in teaching nouns and pronouns.

Table 3. Frequency distribution of the students in terms of related training/ seminars attended on gender and development.

Related Trainings/Seminars Attended on Gender and Development	Number of Students	Percentage
Gender and Development (GAD)	89	85.58
Magna Carta for Women/VAWC	9	8.65
Women's Month Celebration	6	5.77

Level of Awareness on Gender-Neutral Language Among the Fourth Year Students

The data presented in Table 4 provides information on the level of awareness of gender-neutral language among fourth-year students measured by a vocabulary test score. The table includes descriptive values for each score range, the corresponding level of awareness, the number of students, and the percentage distribution.

Based on the vocabulary test scores, the highest score range of 13-15 is categorized as "Outstanding" and represents "Extremely Aware" students. There were 64 students in this range, accounting for 61.54% of the total. This indicates a significant portion of students who have a high level of awareness of gender-neutral language.

The next score range of 10-12 is labeled as "Very satisfactory" and represents "Aware" students. In this range, there were 30 students or 28.85% of the total. These students demonstrate a good level of awareness of gender-neutral language.

The score range of 7-9 is described as "Satisfactory" and represents "Somewhat Aware" students. Only 3 students (2.88%), suggesting a smaller group with a moderate level of awareness.

Similarly, the score range of 4-6 is categorized as "Fairly Satisfactory" and represents "Slightly Aware" students. There were 3 students (2.88%) in this range, indicating a limited level of awareness.

Finally, the lowest score range of 0-3 is labeled as "Did not Meet Expectations" and represents "Not at All Aware" students. There were 4 students (3.85%) in this range, indicating a lack of awareness of gender-neutral language.

The average score of all students was calculated to be 12.42, which falls within the "Very Satisfactory" range and represents students are "Aware" of gender-neutral language.

Thus, the data suggests that a majority of the fourth-year students have a good level of awareness of gender-neutral language, with a significant number falling into the "Outstanding" and "Very Satisfactory" categories. However, there is still a small proportion of students who have limited or no awareness of gender-neutral language.

It can be concluded that the findings validate that the students have schemas on gender-neutral language as attributed with their exposure on gender and development programs through the efforts of CSU GAD. Accordingly, the establishment of CSU GAD office is pursuant to Republic Act 9710 or the Magna Carta for Women (MCW), wherein agencies are tasked to formulate a GAD office and implement the utilization of at least five percent (5%) of their total budget appropriations. It is CSU GAD Focal Point System's mission to promote the well-being of every stakeholder especially the marginalized groups by addressing gender issues and concerns in academics, administration, research, extension, and training. Its goals are to raise awareness of every stakeholder on GAD and its core messages and to ensure CSU and its areas of concerns to participate in development projects with utmost dignity.

Table 4. Frequency and Percentage distribution on the Level of Awareness on Gender-Neutral Language Among the Fourth Year Students

Vocabulary Test Score	Descriptive Value	Transposition	Number of Students	Percentage
13-15	Outstanding	Extremely Aware	64	61.54
10-12	Very satisfactory	Aware	30	28.85
7-9	Satisfactory	Somewhat Aware	3	2.88
4-6	Fairly Satisfactory	Slightly Aware	3	2.88
0-3	Did not Meet Expectations	Not at All Aware	4	3.85
Average Score= 12.42=12 (VERY SATISFACTORY / AWARE)				

The Extent of Use of Gender-Neutral Language Among the Fourth Year Students

The data presented in Table 5 represents an assessment of the extent of use of gender-neutral language among fourth-year students. The table includes various indicators related to different contexts of communication, their corresponding mean scores, and descriptive values.

The mean scores for each indicator range from 3.45 to 3.68, indicating a high level of usage of gender-neutral language across different contexts. The descriptive value "Often" is assigned to all indicators, suggesting that the students frequently use gender-neutral language in these situations. Looking at specific indicators, the conversations with friends and family (Indicator 1) received a mean score of 3.68, indicating that students often use gender-neutral language in these informal settings. Similarly, conversations in educational or academic settings (Indicator 2), written communication (Indicator 4), and social media posts and comments (Indicator 5) also received high mean scores, suggesting that gender-neutral language is frequently utilized in these contexts.

The indicators related to professional or workplace settings (Indicator 3), addressing individuals whose gender identity is unknown (Indicator 7), and referring to groups or mixed-gender audiences (Indicator 8) received slightly lower mean scores, ranging from 3.53 to 3.61. Nevertheless, these scores still indicate that the students often use gender-neutral language in these scenarios.

The indicators related to non-binary or gender non-conforming individuals (Indicator 9), fair and equal treatment of individuals with different gender identities (Indicator 10), and job titles or occupational terms (Indicator 11) received mean scores ranging from 3.47 to 3.63, suggesting that gender-neutral language is frequently employed in these contexts as well.

The mean scores for discussing historical figures or persons from diverse backgrounds (Indicator 12), personal experiences or anecdotes (Indicator 13), consuming or creating media content (Indicator 14), and engaging in advocacy or activism for gender equality and inclusivity (Indicator 15) ranged from 3.5 to 3.6, indicating that students often use gender-neutral language in these situations.

The total weighted mean across all indicators was calculated to be 3.57, which falls under the descriptive value "Often." This suggests that overall, the fourth-year students have a high frequency of using gender-neutral language across various communication contexts.

In summary, the data indicates that the fourth-year students demonstrate a consistent and frequent use of gender-neutral language across a range of contexts, including personal conversations, educational settings, written communication, social media and more

According to the research conducted by Talosa (2021) on student's general attitude in

gender-inclusive language, in Cagayan State University, efforts are now undertaken to address GAD concerns which include the use of inclusive language. Furthermore, according to The Writing Center University of North Carolina (2012), "writers today must think carefully about the ways they express gender in order to convey their ideas clearly and accurately to the readers." It can be concluded that the findings mentioned above indicate that the respondents are aware and are actively working towards promoting gender equality and inclusivity through their language usage. These efforts can be attributed to the programs conducted by CSU GAD.

Table 5. Assessment on The Extent of Use of Gender-Neutral Language Among the Fourth Year Students

INDICATORS	Mean	Transposed Value
1. Conversations with friends and family	3.68	Large Extent
2. Conversations in educational or academic settings	3.66	Large Extent
3. Conversations in professional or workplace settings	3.53	Large Extent
4. Written communication (e.g., emails, messages, letters)	3.66	Large Extent
5. Social media posts and comments	3.55	Large Extent
6. Public speaking or presentations	3.45	Large Extent
7. Addressing individuals whose gender identity is unknown to you	3.53	Large Extent
8. Referring to groups or mixed-gender audiences	3.61	Large Extent
9. When discussing or referring to non-binary or gender non-conforming individuals	3.47	Large Extent
10. When addressing individuals of different gender identities in a fair and equal manner	3.63	Large Extent
11. When using job titles or occupational terms (e.g., firefighter, police officer)	3.6	Large Extent
12. When discussing historical figures or persons from diverse backgrounds	3.5	Large Extent
13. When discussing personal experiences or anecdotes	3.59	Large Extent
14. When consuming or creating media content (e.g., movies, books, articles)	3.55	Large Extent
15. When engaging in advocacy or activism for gender equality and inclusivity	3.6	Large Extent
Total Weighted Mean	3.57	Large Extent

Relationship Between the Profile Variables of the Fourth Year CTED Students and Their Level of Awareness of Gender-Neutral

Language

The data presented in Table 6 shows the correlation results between the profile variables of fourth-year CTED students and their level of awareness of gender-neutral language. The table includes the chi-square value, p-value, and remarks for each profile variable.

The first profile variable analyzed is "Sex." The chi-square value is 2.8303, and the p-value is 0.5866. The p-value is greater than 0.05, indicating that there is no statistically significant relationship between sex and the level of awareness of gender-neutral language among the students. Therefore, the variable "Sex" is considered non-significant (NS) in relation to the students' awareness. This finding contradicted the findings of Lee (2007) and Straub (2022) that there are differences between men and women in awareness towards such language as women opt for gender-fair language while men prefer the exclusive, male generic forms.

The second profile variable examined is "Field of Specialization." The chi-square value is 17.0657, and the p-value is 0.3814. Similar to the previous variable, the p-value is greater than 0.05, indicating no statistically significant relationship between the field of specialization and the level of awareness of gender-neutral language. Hence, the variable "Field of Specialization" is also considered non-significant (NS) in relation to the students' awareness.

The third profile variable analyzed is "Related Trainings/Seminars Attended on Gender and Development." In this case, the chi-square value is 21.7269, and the p-value is 0.00545. The p-value is less than 0.01, which indicates a highly significant relationship between attending trainings/seminars on gender and development and the level of awareness of gender-neutral language among the students. Therefore, the variable "Related Trainings/Seminars Attended on Gender and Development" is considered highly significant at the 0.01 level. According to the Exposure and Familiarity Model, the more exposure humans get about a product or service, the more familiar they become, thus, awareness may change the frequent gender-neutral language seminars or trainings are conducted.

In summary, the correlation results suggest that while the variables "Sex" and "Field of Specialization" do not have a significant

relationship with the students' level of awareness of gender-neutral language. The variable "Related Trainings/Seminars Attended on Gender and Development" shows a highly significant relationship. This implies that students who have attended trainings/seminars on gender and development exhibit a higher level of awareness of gender-neutral language compared to those who have not attended such sessions.

Table 6. Correlation Result on the Relationship Between the Profile Variables of The Fourth Year CTED Students and Their Level of Awareness of Gender-Neutral Language

Profile Variables	Chi-Square Value	p-value	Remarks
Sex	2.8303	.5866	NS
Field of Specialization	17.0657	.3814	NS
Related Trainings/Seminars Attended on Gender and Development	21.7269 **	.00545	Highly Significant
** Highly Significant at .01 level			

Relationship Between the Profile Variables of The Fourth Year CTED Students and Their Extent of Use of Gender-Neutral Language

The data presented in Table 7 shows the correlation results between the profile variables of fourth-year CTED students and their extent of use of gender-neutral language. The table includes the chi-square value, p-value, and remarks for each profile variable.

The first profile variable analyzed is "Sex." The chi-square value is 9.4923, and the p-value is 0.0499. The p-value is less than 0.05, indicating a statistically significant relationship between sex and the extent of use of gender-neutral language among the students. Therefore, the variable "Sex" is considered significant at the 0.05 level.

In sociolinguistics, the researchers study the relationship between language and gender in many aspects such as gender and politeness, gender, and language style. Most of the researchers believed that females are more polite than males. The language of female is indirect and inclusive; male's is direct to the contrary. Hence, a possible deduction is that women might opt for gender-neutral language as a means of promoting politeness and inclusivity in their speech.

The second profile variable examined is "Field of Specialization." The chi-square value is 20.4608, and the p-value is 0.2002. The p-value is greater than 0.05, indicating no statistically significant relationship between the field of specialization and the extent of use of gender-neutral language. Hence, the variable "Field of Specialization" is considered non-significant (NS) in relation to the students' extent of use of gender-neutral language.

The third profile variable analyzed is "Related Trainings/Seminars Attended on Gender and Development." In this case, the chi-square value is 3.9042, and the p-value is 0.8657. Similar to the previous variable, the p-value is greater than 0.05, indicating no statistically significant relationship between attending trainings/seminars on gender and development and the extent of use of gender-neutral language. Therefore, the variable "Related Trainings/Seminars Attended on Gender and Development" is considered non-significant (NS) in relation to the students' extent of use of gender-neutral language. This finding can be associated to the Selective Exposure Theory which is a communication theory that explores how individuals actively select and expose themselves to certain types of information while avoiding others. According to this theory, people tend to seek out information that aligns with their existing beliefs, attitudes, and preferences, while avoiding information that challenges or contradicts their established views. Gender-specific terms are internalized early in life. The grammars of the seventeenth, eighteenth, nineteenth, and twentieth centuries give evidence that indicates most of the names in English are used for exclusive masculine reference (Kramarae, 1981). It is sad to note however that despite wealth of seminars/trainings related to GAD, inclusive language is not consistently used.

In summary, the correlation results suggest that the variable "Sex" has a statistically significant relationship with the extent of use of gender-neutral language among fourth-year CTED students. However, the variables "Field of Specialization" and "Related Trainings/Seminars Attended on Gender and Development" do not show a significant relationship with the extent of use of gender-neutral language. This implies that the students' gender (male or female) may influence their extent of use of gender-neutral language, while their field of specialization and attendance at trainings/seminars on gender and development may not have a significant impact on their language usage.
In consideration of the foregoing findings, the null hypothesis is therefore partially rejected.

Table 7. Correlation Result on the Relationship Between the Profile Variables of The Fourth Year CTED Students and Their Extent of Use of Gender-Neutral Language

Profile Variables	Chi-Square Value	P-value	Remarks
Sex	9.4923*	.0499	Significant
Field of	20.460	.200	NS
Related Trainings/Seminars Attended on Gender and Development	3.9042	.8657	NS
* Significant at .0 5 level			

Relationship between the Level of Awareness and Extent of Use of Gender-Neutral Language

The data presented in Table 8 shows the correlation results between the level of awareness and extent of use of gender-neutral language. The table includes the profile variables, r-value, p-value, and remarks for each profile variable.

The variables being studied are the level of awareness of gender-neutral language and the extent to which it is used. The r-value, or correlation coefficient, measures the strength and direction of the relationship between the two variables. In this case, the r-value is 0.460. The positive sign indicates a positive correlation, suggesting that as awareness of gender-neutral language increases, the extent of its use also tends to increase. The "**" notation denotes that the correlation is significant at the 0.01 level.

Meanwhile, the p-value is reported as 0.000, which means it is smaller than 0.01. The "0.01" level refers to the significance level chosen for the analysis. The extremely low p-value indicates that the observed correlation is highly unlikely to have occurred by chance.
The "Highly Significant" remark emphasizes the strength and reliability of the observed relationship between awareness and extent of use of gender-neutral language. It confirms that the correlation is statistically significant at the chosen significance level of 0.01.

This result is supported by the article of Bilash (2009) on language awareness, "by increasing students' language awareness, the students are better able to understand, appreciate and use the language." Therefore, with heightened language awareness, it enhances students' ability to effectively use the language in various contexts.

Overall, the table indicates a statistically significant positive correlation between awareness of gender-neutral language and its extent of use. As awareness increases, individuals are more likely to use gender-neutral language to a greater extent.

Table 8. Relationship Between the Extent of Use and Their level of Awareness of Gender-Neutral Language

Profile Variables	r-value	P-value	Remarks
Awareness vs Extent of Use	.460**	.000	Highly Significant
** significant at .01 level			

CONCLUSION

In consideration of the foregoing findings, the researchers hereby concluded that attending seminars or training sessions related to gender and development appears to positively influence students' awareness of gender-neutral language. Additionally, the extent of use of gender-neutral language varies based on students' sex, indicating a relationship between sex and language usage. Thus, these findings emphasize the value of implementing seminars and trainings in gender-neutral language to raise awareness among students, and they highlight the role that sex may play in usage patterns. Also, as awareness increases, students are more likely to use gender-neutral language to a greater extent.

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DESIGN AND DEVELOPMENT OF RECORD MANAGEMENT SYSTEM WITH CLEARANCE ISSUANCE SYSTEM FOR POLICE STATION AT STA. PRAXEDEZ, CAGAYAN

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ABSTRACT

Police stations must have a computerized system to have a better service for the people. However, Sta. Praxedes, Cagayan police station does not have one. The system aimed to evaluate a Computerized Police Clearance Generator System of Sta. Praxedes police station. Specifically, it aimed to organize a system in keeping client records, introduce faster and more accurate system in generating reports for clients and staff, lessen the errors and inaccuracy encountered during transactions, and manage the day-to-day transactions in keeping, processing and releasing of records.

Keywords: record management system, clearance issuance system, police station, police clearance, Sta. Praxedes, Cagayan

INTRODUCTION

Technology is an essential part of our lives now, and we cannot live without it. As time goes by, technology has been created and developed that makes our daily life much easier to function. It serves as a key to every work to function well like in a government agency that needs to have a computerized system in order to have a quick release of issuance of police clearance. It would help the different institutions, organization and groups to create and store records on a database as a repository. Police clearance issuance is proposed to centralize the persons who can get police clearance for the purpose of fast and efficient sharing of critical information about people who has blotter records in the Police Station.

Nowadays, police stations must have a computerized system to have a better service for the people. However, Sta. Praxedes, Cagayan police station does not have one.

To lessen the problems encountered by the police officers of Sta. Praxedes, Cagayan, police station, the researchers developed a system which is" Issuance of Police Clearance System of Sta. Praxedes, Cagayan" that would provide faster and easier operation in the issuance of certification of police clearance, minimizing time and effort.

Generally, this research undertaking aimed to evaluate a computerized police clearance generator system of Sta. Praxedes. Specifically, it aimed to organize system in keeping client records, introduce faster and more accurate system in generating records of clients, lessen the errors and inaccuracy encountered during transactions, and manage the day to day transactions in keeping, processing and releasing of records. This study used a descriptive type of research in developing the software that would help the said organization come up a better and advanced transaction method.

The system would ensure a faster and easier way of generating needed reports and documents. The system would also minimize the use of too much resources and time.

This study is worthy of seeing its purpose for the betterment of the Police Clearance Issuance. This is the great aid to solve some lacking and speeding up transactions or work that the agency needs to fulfill and provide for the client's need.

The researchers recommend this study to serve as their guide or reference for students who are conducting a research and a guide that will produce better and optimized implementation. The proposed study is also recommended for further enhancement and improvement.

It enhances more the capability of having an accurate form of business. The researchers believe that the viability of future system creates good market. It also takes a lot easier to manage the computerized system if the users are aided with more training and transitions, exposure and mastery of the said system.

METHODOLOGY

Requirement Analysis

This phase is concerned with the gathering and analyzing of requirements for the software development. In this phase, the researchers made a decision to design and develop the system. First, they asked permission from the College Dean for them to conduct their study.

Upon approval, the researchers secured permission from the Police Chief Inspector of Sta. Praxedes police station for them to conduct the study. They interviewed the staff. From the answers, the researchers were able to identify the problems with the current set-up like organizational structure, processes. A master data was identified.

The development of the study is a whole lot tricky than what the researchers expected. They

encountered situations like; difficulty of analyzing some of the part of the manuscript and time constraints in doing certain tasks assigned to every member due to conflict of schedule of their subjects.
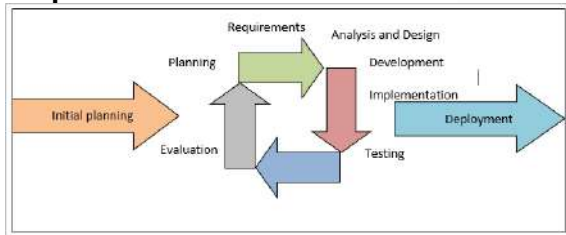
Requirement Documentation

Figure 1: Requirement Documentation

User Requirement

The system should have the capability of making the user feel comfortable in manipulating the system. It can allow different levels if accessed and that makes the interface user friendly. The size of the system in relation to what it can do, has a regular capacity for any document. The system could include any type of heavy data but in right places. To make it safe for unnecessary errors, the user should put in mind that the system must consider the environment, in which the system will be operated. It is also versatile that can be used in different ways. The energy consumption is also at the rate of consumable.

In reducing the amount of energy consumed, it must be restricted. It measured all costs associated with the system, throughout a lifetime of the system. This includes capital cost as well as the running cost. To maintain the workflow of the system it should also be manipulated by some of the practiced officers in a certain office. The system dynamics can be seen on the right top corner of the system which contains the setting time and rise time. For the user to access the system when it's asleep, just press the mouse pointer to any part of the system and it will be activated.

As for the sleep time of the system, you just go to the settings and press the sleep button. While asleep, all the unnecessary documents will be automatically deleted. Its restoration when for example: brownout, cannot be automatically forgotten. All the unsaved files are retained and can be restored even for a long hour brownout.
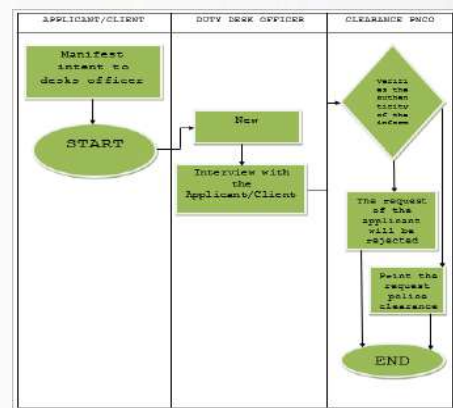
Functional Requirements

Figure 2: Data Flow Diagram

Interface Requirement

In its interface requirements, it should accept numeric data entry to the first field and immediately access the second field. If the data entered is not numeric then the system will ` maybe hang for a bit and or lose its power. Field two can accept all types of data. When clicking the approve button, it moves the request to the approval workflow on the next field of the system.

Once it is approved, there will be cancel button and saving button. When other corner has been clicked, the buttons will blink depending on how many click has been made. The system can print on-screen data to the printer, just click the print button on the upper left side of the interface.

The system can limit access to authorized users. The system can secure data with a secret password to be entered by the rightful users to access the system and to avoid lots of errors. The first screen displays the username name and password of the user to access the system.

The second screen displays other buttons to access the file, transaction, reports and about. In which the file button displays all the data that's been put to the system. The transaction holds all business deals. The reports are the written account of something that one has observed, heard, done, or investigated.

The about button is the place where all the information about the system and the information about developers of the system. When file is being clicked, the next interface will be automatically executed to the system configuration, user account, address, police staff and information data entry. If the user wants to log-out, just click the log-out button and then the account will exit. If transaction is being clicked, it will display the blotter button, crime record data entry, police clearance and lastly the most wanted criminal. If report is being clicked, the next interface will be the crime summary report, blotter summary report and the detailed crime report.

User Interface

Development and Testing.

        During the development, the researches conferred to their adviser for the suggestions. Discussion was also made in the Precinct of PNP police in Sta. Praxedes. The testing part is to tract errors in to the software that run through a series of test to verify if it functions and that is to meet the requirement phase.

Implementation Plan

  The researchers concerned with those task lead to a fully operational management. The system met all the requirement phase and was able accommodate the needs of the user. The overall resources needed to support the implementation effort such as the computer, software facilities and people ware were present. The researchers practiced a rehearsal in order to tutor the soon to be users prior to deployment

RESULTS AND DISCUSSION

THE PROPOSED SYSTEM
The Login Form

        To maintain the security of the records, the authorized user can access the system by typing a username as well as the password. The user must login. (See Figure 3)

- To Login, just enter the correct username and password then click login or just simply press enter key.

Figure 3. User Login Form

If your attempts are wrong, a message box will appear filling your login is denied or your password is invalid.(See Figure 4)

Figure 4. Access Denied

Then if the user enters the correct username and password, it will prompt the user that he/she has successfully login to the system. (See Figure 5)

Figure 5. Access Granted

If it is granted, then the main form will appear. It consists of five (5) menus: **Setup, Transaction, Report, Logout** and **Exit.** (See Figure 6)

Figure 6. Main Form

Setup Menu

        It is responsible on the configurations of the systems. The users can modify every setup depending on how he/she will manage the system. It has eight(8) submenus, namely; **PNP Personnel, User Accounts, Addresses, Client, Profile References, Chief of Police, Duty Investigator** and **Back-up Database.** (See Figure 7)

Figure 7. Submenus of Setup

        If you click PNP Personnel submenu, a window will appear and in the form, there are four (4) buttons, namely, **Add, Edit, Save,** and **Close.** This is responsible for adding and editing records of personnel. (See Figure 8)

Figure 8. Setup Form for PNP Personnel

To add new PNP Personnel, just click the **Add** button, Fill up all the necessary information then click **Save** button and click **Cancel** button to cancel the adding of record. (See Figure 9)

Figure 9. Adding Form for PNP Personnel

If it is not filled up with all the required information, an incomplete application message will appear. (See Figure 10)
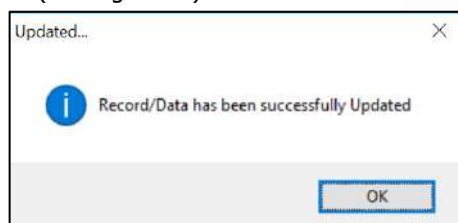
Figure 10. Confirmation Message for Saved PNP Personnel

To Edit records, select and double click a name under list of personnel at the bottom then click the **Edit.** (See Figure 11)

Figure 11. Updating Form for PNP Personnel Record

Upon Clicking **Update** button, a confirmation will appear that the record has successfully updated. (See Figure 12)
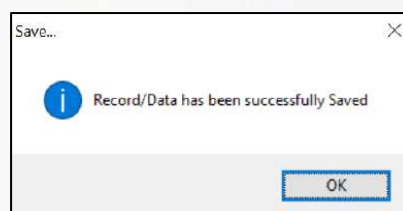
Figure 12. Confirmation Message for Updated PNP Personnel Record

If you click User Accounts submenu, a window will appear and, in the form,, there are four (4) buttons, namely; **New, Edit, Save,** and **Close**. This is responsible for adding and editing user account registered in the system. (See Figure 13)

Figure 13. Setup Form for User Accounts

If it filled up correctly with the required information, a confirmation message will appear that the record has been successfully saved.(See Figure 14)
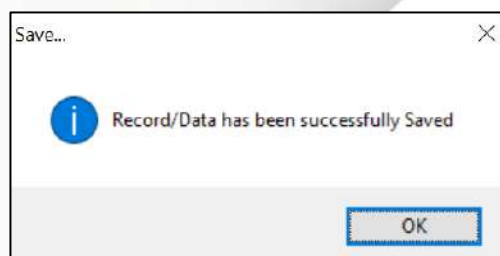
Figure 14. Confirmation Message for Saved User Account

To Edit records, select and double click a name under list of accounts at the bottom then click Edit. (See Figure 15)

37 | P a g e
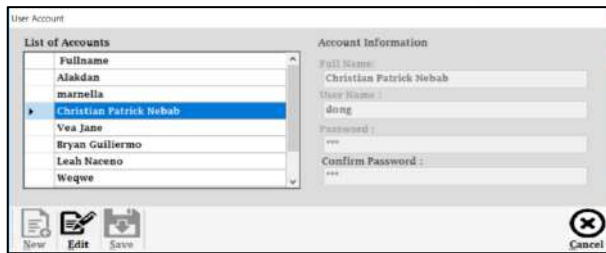
Figure 15. Editing Form for User Account

Upon clicking **Edit** button, you will now be able to update the account. Click **Update** button to save the record that you updated. (See Figure 16)
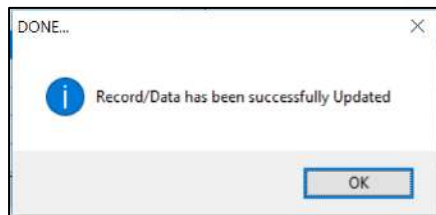
Figure 16. Updating User Account

Upon Clicking **Update** button, and confirmation will appear that the record has successfully updated.(See Figure 17)

Figure 17. Updating Form Message for User Account

If you click the **Addresses** submenu, a window will appear and in the address form there are four (4) buttons, namely; **New, Edit, Delete,** and **Close.** This is responsible for adding, editing, and deleting records for address.

In adding new address there are four (4) categories you must consider namely; Province, Municipality, Barangay and Street. (See Figure 18).

Figure 18. Address Configuration

If you click client submenu, a window will appear and the client form there are four (4) buttons namely; add, edit, save and close. This is responsible for adding and editing records of client. (See Figure 19)
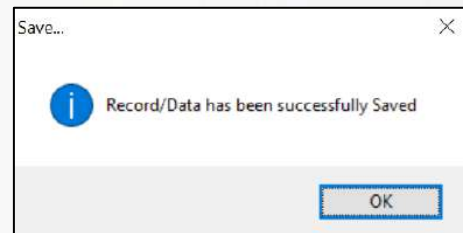
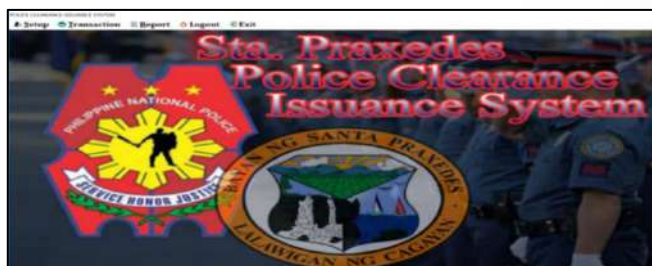Figure 19. Setup form for client

If it is not filled up with all the required information, an incomplete message will appear.(See Figure 20)

Figure 20. Confirmation message for saved client

To edit record select and double click a name under list of names at the button then click the edit. (See Figure 21)

Figure 21. Editing form client record

To edit the Duty Investigator, simply go to PNP Personnel, after you edit the name, search the name in combo box then click OK button to save or simply press enter key and a confirmation message will appear. (Figure 23)

Figure 23. Saving Back-Up Database Form

There is a default format of the file name in backing up the database which is the combination of the database name and the current data when you back up the database. This is for the accuracy of the system and to easily determine the last time the database was backed up. Click Save button to Save or simply press enter key and a confirmation message will appear. (See Figure 24)

Figure 24.Confirmation Message for Successful Back-Up

Transaction Menu

Upon clicking the Transaction Module it will appear its submenu namely; Police Clearance, Blotter and Criminal Record Management. (See Figure 25)

Figure 25. Submenus of Transaction

If you click the Police Clearance submenu, a window will appear. This is responsible for issuing a police clearance. It has two(2) buttons namely; Print and Close. (See Figure 26)

Figure 26.Police Clearance Form

To print a Police Clearance, complete the entire required field then click the View button. (See Figure 27)

Figure 27. Printing a Police Clearance

Upon clicking View button, If the person has a derogatory record that is under investigation or has unresolved case, a confirmation message will appear informing you that the person has a record and will ask if you want to proceed or not. (See Figure 28)

Figure 28. Warning Message of Police Clearance

If the Person does not have a derogatory record, a window will appear wherein you can now print his/her clearance. (See Figure 29)

Figure 29. Police Clearance Certificate

If you click Blotter submenu, a window will appear and in the form there are three (3) buttons, namely; Add, Save and Close. This is responsible for adding a certain blotter which is very important to be briefly detailed. (See Figure 30)

Figure 30. Blotter Form

Report Menu

Upon clicking the report module it will appear its submenus namely; Crime summary, blotter summary and derogatory record.(See figure 31)

Figure 31. Submenus of report

If you click crime summary submenu, a window from will appear. This is responsible in showing and printing the crime summary of a certain span of time. (See Figure 32)

Figure 32. Crime Date Summary Form

Upon clicking the **View** button after selecting a certain date you want to show or print, a window form will appear showing the records in summarize form. (See Figure 33)

Figure 33. Crime summary report

If you click **Blotter Summary** submenu, a window form will appear. This is responsible in showing and printing the blotter summary of a certain span of time. (See figure 34)

Figure 34. Blotter Date Summary form

Upon clicking the view button after selecting a certain date you want to show or print, a window form will appear showing the records in summarize form. (See Figure 35)

Figure 35. Blotter summary report

If you click derogatory record submenu, a window form will appear. This is responsible in showing and printing a summary of a derogatory base in case status in a certain span of time. (See Figure36)

Figure 36. No Record Configuration Message

QUALITATIVE RESULT

An Evaluation Sheet has been given to the evaluators. Scoring is according to the given number in documents.5-EXCELLENT,4-VERY GOOD, 3-GOOD, 2-FAIR, 1-POOR.

Functionality. The capability of the software product to provide functions which meet stated and implied needs when the software was used under specified conditions (what the software does to fulfill needs)

Reliability. The capability of the software product to maintain its level of performance under stated conditions for a stated period of time.

Usability. The capability of the software product to be understood, learned used and attractive to the user, when used under specified conditions (the effort needed for use)

Efficiency. The capability of the software product to provide appropriate performance, relative to the amount of resources used, under stated conditions.

Maintainability. The Capability of the software product to be modified. Modifications may include corrections, improvement or adaptation of the software to changes in the environment and in the requirements and functional specification (the effort needed to be modified)

Portability. The capability of the software product to be transferred from one environment to another. The environment may include organizational, hardware or software environment.

The Functionality, Reliability, Usability, Efficiency, Maintainability, and Portability result have been given 5 and 4 as a score.

CONCLUSIONS

With the features of the project titled, "Design and Development of Record Management System with Clearance Issuance System for Police Office of Sta. Praxedez," it is expected to provide a smoother and faster flow of issuing clearance. It would provide a more systematic record management process and well-organized records of all recipents.

RECOMMENDATIONS

1. The study "Design and Development of Record Management System with Clearance Issuance System for Police Office of Sta. Praxedez" should be implemented by PNP of Sta. Praxedez to ensure a smooth the flow of issuing clearance. Also, it would provide a faster flow of record management between the PNP recipients and the PNP during issuing of clearance.

2. It is strongly recommended for them to adopt it because it would minimize labor requirements.

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LEVEL OF ACCEPTABILITY AND EXTENT OF USE
OF LANDBANK MOBILE BANKING APPLICATION

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ABSTRACT

Mobile banking has become more prevalent in this new digital era. The banking sector is forced to adapt to the new change and sought to leverage new technology in their services. However, the adoption rate of such technology by customers is relatively low. This research determined the level of acceptability and extent of use of the LANDBANK Mobile Banking Application among customers of Sanchez Mira, Cagayan branch. The study used the Quantitative Descriptive research design. It used a survey questionnaire as the main gathering tool for the needed information. The population of the study consisted of one hundred (100) clients of the said financial institution from various municipalities who are using the LANDBANK mobile banking app. The study employed various statistical techniques, including frequency and percentage distribution analysis, weighted mean, and Chi-Square Test. It is found that the LANDBANK mobile banking app was totally accepted as a platform in conducting banking transactions with reference to various perceived factors such as usefulness, ease of use, trust and security, subjective norms, and compatibility with lifestyle. Also, the respondents have not fully utilized the LANDBANK Mobile Banking Application features. Out of its sixteen features, it was revealed that only two features were frequently used: Viewing of balance and transaction history for both Deposit account and Credit Card and Fund transfer. The study concluded that age affects the level of acceptability of the LANDBANK Mobile Banking Application and the extent of use of the app is also related to the respondent's employment status and monthly income.

Keywords: Landbank, Mobile banking, perceived usefulness, perceived ease of use, trust and security

INTRODUCTION

Due to the increasing global competitiveness, the Philippine government was forced to restructure its policies and regulations. As a result, Republic Act No. 11032, also known as the Ease of Doing Business Act (EDB) has gone into effect. The Ease of Doing Business (EODB) Law is promulgated by the Philippine government to encourage more micro, small, and medium enterprises and foreign investment in the Philippines. Essentially, RA No. 11032 requires government agencies to streamline business registration and compliance procedures and the banking sector plays a critical role. In order to be at par with emerging banking institutions and aid the goal of RA 11032, it raised the need for the financial sector to leverage new technology. The Philippines' central bank, the Bangko Sentral ng Pilipinas (BSP), asserts that the adoption of digital banking business models is predicated on robust, secure, and resilient infrastructure with effective digital governance mechanisms. They introduced the Digital Payments Transformation Road Map for 2020-2023 to achieve an efficient, inclusive, safe and secure digital payments ecosystem that supports the diverse needs and capabilities of individuals and firms. According to reports, the BSP has a vision for the country to become a digital-heavy, cash-light society to help achieve inclusive growth. Thus, according to the BSP, 50% or half of all transactions should be digital by 2023, and 70% of Filipino adults should have formal bank accounts by 2023. The BSP highlighted how the pandemic has been a catalyst for financial digitalization, as mobility restrictions prompted more people to use digital payments.

Digital banking is banking done online with no in-person services required. Digital banking is the digitization of every level, from the front to the back end of banking. This means that banks utilizing digital banking rely on artificial intelligence to automate back-end operations such as administrative tasks and data processing. Hence, digital banking facilitates efficient, convenient, and secure banking transactions. As more and more institutions have begun to offer online services, digital banking has risen in popularity as a viable banking solution. Now, most popular banks offer some services online for their customers to provide convenient solutions (Henry, 2021).

Banking has evolved over time, it brought drastic changes to the industry. Different developing countries such as the Philippines have sought to leverage technology. A recent survey by global analytics software firm FICO has revealed that 56 percent of Filipino consumers prefer to use digital channels to engage with their bank during financial hardship. Thus, 29 percent of Filipinos prefer to communicate via their mobile banking application; 12 percent use internet banking. 40 percent of Filipinos prefer to deal with just one primary bank

with a further 34 percent saying that they 'somewhat agreed' this was their preference. One of the leading banks preferred by Filipinos is the Landbank of the Philippines which is the focus of the study.

The Land Bank of the Philippines has been the official depository of the Philippine government for 60 years. As part of the national government agencies and one of the leading banks in the country, the LANDBANK adopted the digital mode of banking to cater the needs of their clients

Although LANDBANK's online banking transactions grew significantly, especially during the pandemic, mobility restrictions and strict social distancing protocols pushed digital banking transactions upward as more customers shifted to electronic banking transactions from in-person transactions at the branches. However, this growth does not necessarily indicate that every local area is able to fully adopt digital banking. Most especially to where unbanked Filipinos reside and only few are able to fully utilize it. A study conducted by Capistrano (2021) reveals that the most influential factor towards online banking acceptance and use of the country's online banking services is the facilitating conditions, especially in terms of gaining the necessary knowledge needed to use a bank's website or mobile application. As cited by Capistrano (2021), facilitating conditions covers the individuals' beliefs that there is adequate organizational and infrastructure support to effectively and efficiently use the technology being employed to accomplish the tasks it is supposed to do (Venkatesh et al., 2003). This is also colloquially referred to as the favorable external environmental conditions that empower and enable users to exert considerable control over the technology that they are using (Venkatesh et al., 2011).

In the case of LANDBANK Sanchez Mira Branch, as it recently adopted a digital banking system, new customers are getting aware of the existence of the online application for new accounts and their mobile banking application. However, there are still doubts (privacy & security) circulating around customers and perceived risks circulating due to lack of knowledge. Although there are several who are able to use the LANDBANK digital banking services in Sanchez Mira Branch, only now and then they do not fully utilize the online banking services provided by the application. Hence, this study is intended to investigate further to ascertain the level of acceptability and extent of use of LANDBANK mobile banking application to local customers of LANDBANK Sanchez Mira Branch.

Objectives of the Study

Generally, this study aimed to determine the customer's level of acceptability and the extent of use of the LANDBANK Mobile Banking Application. Specifically, it looked into the profile of the respondents, the level of acceptance of customers in using LANDBANK Mobile Banking Application along perceived usefulness, ease of use, trust or security, , subjective norms, and perceived compatibility with lifestyle; the customer's extent of use of the LANDBANK Mobile Banking Application; and it established relationship between the profile of the respondents to the level of acceptability and extent of use of the LANDBANK Mobile Banking Application.

METHODOLOGY

Research Design

The researchers used the Quantitative Descriptive Research Method, which is concerned with describing the character of a group. This research design determined the customer's level of acceptability and the extent of use of the LANDBANK Mobile Banking Application.

Locale of the Study

The study was conducted around Sanchez Mira, Cagayan, mainly at the Land Bank of the Philippines-Sanchez Mira Branch, located at Centro 2, Sanchez Mira, Cagayan. The branch is headed by Mr. Rene D. Domingo.

Respondents and Sampling Procedure

The respondents were the customers of Land Bank of the Philippines-Sanchez Mira Branch who have a LANDBANK Mobile Banking Application account. Thus, the study used both the convenience sampling and purposive sampling methods because the researchers accurately chose and approached eligible respondents to complete a questionnaire. Thus, the sample of the study was composed of 100 respondents.

Research Instrument

The questionnaire was structured in such a way that respondents were able to answer it easily. The questionnaire was divided into sections. The first section determined the respondent's demographic profile. The second and third sections of the questionnaire were structured using the 4-point Likert scale. The second section focused on the respondents' level of acceptance of the LANDBANK Mobile banking application using the adopted Technology Acceptance Model's factors (TAM). The third section focused on the features of the LANDBANK Mobile banking application that determined the respondents' extent of use of the application

Data Gathering Procedure

The researchers asked permission from the administration of Land Bank of the Philippines-Sanchez Mira Branch through letter. For the study, self-administered questionnaires were distributed to elicit information from the respondents. The researchers sought permission first from the respondents if they are willing to participate in the study and once confirmed, the survey questionnaires were provided.

The survey questionnaires were retrieved right after.

Statistical Treatment

To determine the profile of the respondents, the researchers used frequency and percentage distribution. The researchers used a 4-point Likert scale to assess the respondent's level of acceptability and extent of use of the LANDBANK Mobile Banking Application; as a result, weighted mean is also applied. Additionally, Chi-Square Test is used to measure the degree of correlation between the profile of the respondents to the level of acceptability and extent of use of the LANDBANK Mobile Banking Application.

RESULTS AND DISCUSSION

Demographic Profiles of the Respondents
Sex

Table 1 revealed the profiles of the respondents by sex. Based on the findings of the study, the majority of respondents of LANDBANK mobile banking application users were females, comprising 60% of the total sample whilst male respondents were 40%. It essentially showed that females were more inclined to accept and use the application than males. This result was supported by the study conducted by Lee et al. (2022) where the evidence they have gathered suggests an 11 percent point increase in adoption of mobile banking by women and just a 1 percentage point increase by men.

Table 1. Frequency and Percentage Distribution of the Respondent's Profile in terms of Sex

Sex	Freq.	Percentage
Male	40	40%
Female	60	60%
Total	100	100%

Age
The table 2 below shows the profile of the respondents by age. The majority of mobile banking users were between 25 to 40 years of age, corresponding to 47% of the total number of the respondents, followed by ages 24 and below which is 39%, 41-55 years old with 10%, and lastly, the remaining 4% of the total respondents were 56-65 years of age. This essentially implies that the majority of the respondents that are below 40 years old were more technologically inclined and were more likely to accept and use new technology in mobile banking. To support these findings, a study conducted by Alalwan et al (2015) showed the age categories of 25–30 and 31–40 express a higher willingness toward using mobile banking in comparison with older customers (i.e.50–60 and those above 61). Respondents ages from 56 and above were relatively low, there weren't even mobile banking users from 66 years old or older. This could be deemed that older people find it difficult to use and adopt to mobile banking for various reasons. A study conducted by Msweli & Mawela (2021) suggests that the following factors were identified as barriers that hinder the elderly from adopting mobile banking: security, lack of information or understanding, trust and demographics (age, social influence, gender, health decline and language).

Table 2. Frequency and Percentage Distribution of the Respondent's Profile in terms of Age

Age	Freq.	Percentage
24 and below	39	39%
25-40	47	47%
41-55	10	10%
56-65	4	4%
Total	100	100%

Residence

Table 3 revealed the respondent's profiles based on the municipalities nearby Sanchez Mira where they are residing. The majority of the respondents were from Sanchez Mira, corresponding to 46% of the total number of respondents, followed by those who were from Claveria, corresponding to 30% of the total number of respondents, the other municipalities such as Abulug with 10%, Pamplona with 9% and Sta. Praxedes with only 5% of the total number of respondents. As such, this indicated that the majority of the respondents using LANDBANK mobile banking application were from the same area where the Branch Office is located.

Table 3. Frequency and Percentage Distribution of the Respondent's Profile in terms of Residence

Municipality	Freq.	Percentage
Sta. Praxedes	5	5%
Sanchez Mira	46	46%
Claveria	30	30%
Pamplona	9	9%
Others	10	10%
Total	100	100%

Marital Status

Table 4 revealed the respondent's profiles based on their Marital Status. The results illustrated that the majority of the respondents were single, corresponding to 64% of the total number of the respondents, followed by, married 35%, and widowed, which corresponds to 1% of the total respondents. Since most of the participants involved in the study are aged between 25 to 40 years old, most of them were currently employed and students.

Table 4. Frequency and Percentage Distribution of the Respondent's Profile in terms of Marital Status

Marital Status	Freq.	Percentage
Single	64	64%
Married	35	35%
Widowed	1	1%
Total	100	100%

Employment Status

Table 5 revealed the respondent's profiles based on their Employment Status. The results shows that the majority of the respondents were employed (government), corresponding to 46% of the total respondents, followed by students corresponding to 31% of the total respondents, employed (private) 16%, and unemployed (including housewives) as well as retired ones make up only 1% of the total respondents. This essentially suggested that most of the respondents that are employed under the government and students are mobile banking users. In support of this finding, Chawla & Joshi (2017) implies occupation moderates the relationship between perceived convenience and attitude towards mobile banking.

Table 5. Frequency and Percentage Distribution of the Respondent's Profile in terms of Employment Status

Employment Status	Freq.	Percentage
Employed (Gov't)	46	46%
Employed (Private)	16	16%
Self-employed/ Entrepreneur	5	5%
Student	31	31%
Unemployed	1	1%
Retired	1	1%
Total	100	100%

Monthly Income

Table 6 revealed the respondent's profiles based on their income level. The majority of the respondent's income level as shown in the table with the highest percentage of 75% is ₱30,000 and below, followed by ₱30,000.01- 50,000 with 13%, ₱ 50,000.01 - 100,000 with 9%, and lastly, ₱100,000.01 - 500,000 with 3%. Hence, it implied that since the majority of the respondents were employed in the public sector and had a monthly income of ₱30,000 and below, they were more likely to utilize the LANDBANK mobile banking application. Thus, income moderates the impact of perceived convenience and efficiency on attitude towards mobile banking (Chawla & Joshi, 2017).

Table 6. Frequency and Percentage Distribution of the Respondent's Profile in terms of Monthly Income

Monthly Income	Freq.	Percentage
30K and Below	75	75%
30.01K-50K	13	13%
50.01K-100K	9	9%
100.01K-500K	3	3%
Total	100	100%

Level of Acceptability of the LANDBANK Mobile Banking Application
Perceived Usefulness

Perceived usefulness is an essential factor that influences the level of acceptance of any technology among consumers. According to Davis' Theory of Technology Acceptance Model in 1989, he

defined perceived usefulness as the extent to which individuals believe how useful the technology would be.

Based on the findings of the study, the table below revealed that the statement with the highest mean response was statements number 1 and 4. This means that the majority of the respondents strongly agree that the LANDBANK mobile banking application is able to save them time and is easily accessible for them, these two have a mean response of 3.82. In contrast, the statement with the lowest mean response was statement number 5 with a corresponding mean of 3.55. It substantially suggested that the respondents generally agree that they do not need to incur expenses for visiting the bank as they could make banking transactions through the mobile banking application. As has been shown below, the composite mean is 3.71, which means that the usefulness of LANDBANK mobile banking app was highly acceptable. Hence, perceived usefulness has a positive significant relationship with attitude and intention towards adopting mobile banking (Raza et. al, 2017).

Table 7. Level of Acceptability in terms of Perceived Usefulness

Statements	Mean	Descriptive Value
1. Using the LANDBANK app saves time and is suitable for me.	3.82	Strongly Agree
2. By using the LANDBANK app, I can pay close attention and have control over my finances wherever I am.	3.71	Strongly Agree
3. I do not have to stand in queues anymore just to be served by employees and clerical staff as customer service is delivered through the app.	3.67	Strongly Agree
4. I am able to access information for all my transactions and accounts in the app wherever and whenever I want.	3.82	Strongly Agree
5. I do not need to spend money for visiting the bank as I can access bank services through the app.	3.55	Strongly Agree
Weighted Mean	3.71	Highly Acceptable

Perceived Ease of Use

Perceived Ease of Use is defined by Davis (1989) as the degree to which individuals perceive how easy it is to use the technology. Thus, the intensity of use and interaction between users and the system can also indicate ease-of-use. Perceived ease-of use can be measured by the following indicators: easy to learn, easy for users, and easy to operate (Ramli et. al, 2021).

As shown in the table below, the statement with the highest mean response is the statement 1. This suggested that the respondents strongly agree that the LANDBANK mobile banking app is easy to navigate and has a user-friendly interface, with a mean response of 3.71. In contrast, the statement with the lowest mean response is statement number 4, with a corresponding mean of 3.24. It implied that the respondents generally agree that the LANDBANK mobile banking application can cater clients of different ages. The composite mean is 3.55, which suggests that the ease of use of the LANDBANK mobile banking application is highly acceptable. The same statement is implied in the study of Agyei et al. (2020), mobile banking users are not only interested in the usefulness of mobile banking services but also prefer the ease in its usage.

Table 8. Level of Acceptability in terms of Perceived Ease of Use

Statements	Mean	Descriptive Value
1. The LANDBANK App is very easy to navigate and understand as it has a customer-friendly interface.	3.71	Strongly Agree
2. I can carry out my banking operations easily using the LANDBANK App as I am aware of all the features that it offers.	3.65	Strongly Agree
4. I think that the LANDBANK App system is basic to accommodate users of different ages.	3.24	Agree
Weighted Mean	3.55	Highly Acceptable

Perceived Trust and Security

Trust has been widely examined and proven to be a crucial factor in predicting customer's perception and intention toward Mobile banking (Lafraxo et al, 2018) as well as security concerns. The table shows that the highest response is statement number 2, corresponding to a mean response of 3.63 in which the respondents are assured that the LANDBANK MBA strictly follows the data privacy policy. However, the lowest mean response of 3.10 from the respondents which is statement number 4 intricately indicates that LANDBANK MBA has a low risk of scams and identity theft when using the app. As has been shown below, the composite mean is 3.36 in which the perceived security of LANDBANK mobile banking app is highly acceptable. A study conducted by Vejacka & Štofa (2017) reveals that security and trust have a significant effect on attitude toward using and behavioral intention that influences the process of adoption of electronic banking by customers.

Table 9. Level of Acceptability in terms of Perceived Trust and Security

Statements	Mean	Descriptive Value
1. I think that my personal details are secured when using the LANDBANK App.	3.52	Strongly Agree
2. I think that the LANDBANK App system strictly follows data privacy policy.	3.63	Strongly Agree
3. Using the LANDBANK App is more secure than going to the bank physically.	3.18	Agree
4. I think that there is a low risk of scams and identity theft when using the LANDBANK App.	3.10	Agree
Weighted Mean	3.36	Highly Acceptable

Subjective Norms

Subjective norms reveal the beliefs of individuals about how they would be viewed by their reference groups if they perform a certain behavior (Al-Swidi, 2014). The table showed that the highest mean response was statement number 1. The mean response was 3.65 where the respondents strongly agree to recommend the LANDBANK mobile banking app to their family and friends. However, the lowest response in the table shown below was statement number 3 with a corresponding means of 3.28 where it stated that the respondents have never been disappointed while using the LANDBANK mobile banking appplication. The overall composite mean was 3.46 in which the perceived security of LANDBANK mobile banking app is highly acceptable. The findings reported by Jouda et al (2020) that the effects of subjective norms on mobile banking adoption were surprisingly insignificant. However, a study of factors influencing the adoption of mobile banking service among Cihan Bank Customers in Iraq by Salim Abdulrahman (2019) reveals that subjective norms positively affect the adoption of mobile banking.

Table 10. Level of Acceptability in terms of Subjective Norms

Statements	Mean	Descriptive Value
I will recommend using the LANDBANK App to my family and friends.	3.65	Strongly Agree
I think it is important that every client should use the LANDBANK App.	3.47	Strongly Agree
I have never been disappointed while using the LANDBANK App.	3.28	Strongly Agree
Weighted Mean	3.46	Highly Acceptable

Perceived Compatibility with Lifestyle

As shown in the table below, the highest mean response was statement number 3 with a corresponding mean of 3.66 where the respondents strongly agree that they appreciated the benefits of the LANDBANK MBA. In contrast, the lowest response in the table was statement number 2 with the means of 3.47 where the respondents preferred mobile payment over the traditional over-the-counter transactions. In sum, the overall composite mean was highly acceptable to the respondents. Lee & Lee (2010) advocate that technologies that are compatible with the needs of users are usually more easily adopted.

Table 11. Level of Acceptability in terms of Perceived Compatibility with Lifestyle.

Statements	Mean	Descriptive Value
It would be useful for me to use the LANDBANK App in conducting my banking transactions especially now in the new normal.	3.64	Strongly Agree
I prefer using the LANDBANK App over the traditional over-the-counter transactions. It suits my lifestyle.	3.47	Strongly Agree
I highly appreciate the benefits of using the LANDBANK App.	3.66	Strongly Agree
Weighted Mean	3.59	Highly Acceptable

Extent of Use of the LANDBANK Mobile Banking Application

The results showed that there were two features that are always utilized, the feature that have the highest mean response of utilizing the features of LANDBANK mobile banking app is View Balance and Transaction History corresponding to a mean of 3.71 and followed by the fund transfer with a mean of 3.32. Features that are used often are: OTP Generator with a mean of 3.07, Customer Service Inquiry with a mean of 2.99, QR generator with a mean of 2.58, and lastly, Bills Payment with a mean of 2.42. Moreover, there are three features that are seldom used by mobile banking users: Pay via QR and Mobilock have the same mean of 2.29 and Cardless Withdrawal with a mean of 2.13. On the other hand, the seven least and never utilized feature are: View Foreign Exchange with a mean of 1.67, LANDBANK Credit Card (Activation / Registration Change Credit Card PIN) with a mean of 1.23, Apply for Deposit and Checkbook Request have the same mean of 1.22, Apply for Loan Account with a mean of 1.11, and lastly, the Purchase Treasury Bonds with a mean of 1.07. The overall composite mean was 2.13 which implied that the extent of use of LANDBANK mobile banking app by the respondents was in fact fairly frequent.

However, the result can be deemed limited because other features were not applicable to every client. For instance, the checkbook request feature, it cannot be utilized by any client as it is only offered to those who have a checking account. Thus, this feature can be used once or twice a month depending on the client's needs. Also, the feature Apply for Loan Account cannot be frequently utilized because the target of this feature are only those who are qualified to apply for a loan. Thus, such eligible client cannot apply for a loan account every now and then, hencethe said feature is not frequently used. Another feature is the Purchase Treasury Bonds, it can only be used by clients that are interested in investments. Nevertheless, the other features cannot be fully utilized by each client because of its nature and usage. Thus, it made a huge impact to the result of the extent of use of LANDBANK mobile banking application.

Relationship between Demographic Profile of the Respondents to the Level of Acceptability of the LANDBANK Mobile Banking Application

Table 12 shows the result in the test of significant relationship between demographic profile of the respondents to the level of acceptability of the LANDBANK Mobile Banking Application. Chi-square test was used in this table to determine the significant relationship between variables.

In the sex, residence, marital status, employment status and monthly income, the computed p-value of 0.37, 0.26, 0.35, and 0.14 respectively are more than alpha 0.05 level of significance, the researchers failed to reject the null hypothesis, therefore the null hypothesis is accepted. There is no significant relationship in the respondent's level of acceptability of the LANDBANK Mobile Banking Application when grouped according to sex, residence, marital status, employment status and monthly income. On the other hand, since the computed p-value of age is 0.03 which is less than alpha 0.05 level of significance, the researchers are able to reject the null hypothesis, therefore there is a significant relationship in the respondent's level of acceptability of the LANDBANK Mobile Banking Application when grouped according to age.

Based on the findings, the respondent's level of acceptability of the LANDBANK Mobile Banking Application depended on their age. Age plays a vital role in the banking preferences of consumers. This is according to a research study conducted by Munusamy et al (2013) where the results indicate that while the hypotheses on gender, race, income, educational level and occupation have no significance in the adoption of internet banking by the consumers; however, findings in the study indicate that the age of consumers affects the adoption of internet banking. The result also suggested that consumers in the age group below 25 years old were the major contributor to the differences. Hence, the results revealed that younger consumers are more likely to adopt internet banking.

Table 12**.** Relationship between Demographic Profile of the Respondents to the Level of Acceptability of the LANDBANK Mobile Banking Application

Demographic Profile	Chi-square value	df	P-value	Interpretation	Decision
Sex	0.82	1	0.37	Without significant relationship	Accept Ho
Age	8.84	3	0.03	With significant relationship	Reject Ho
Residence	5.29	4	0.26	Without significant relationship	Accept Ho

Marital Status	2.10	2	0.35	Without significant relationship	Accept Ho
Employment Status	8.23	5	0.14	Without significant relationship	Accept Ho
Monthly Income	2.90	3	0.41	Without significant relationship	Accept Ho

Relationship between Demographic Profile of the Respondents to the Extent of Use of the LANDBANK Mobile Banking Application

Table 13 showed the result in the test of significant relationship between the demographic profile of the respondents to their extent of use of the LANDBANK Mobile Banking Application. Chi-square test was used in this table to determine the significant relationship between variables.

In the sex, age, residence and marital status the computed p-value of 0.50, 0.17, 0.21, and 0.98 respectively were more than alpha 0.05 level of significance, in this regard the null hypothesis is accepted. There is no significant relationship in the respondent's extent of use of the LANDBANK Mobile Banking Application when grouped according to sex, age, residence, and marital status. On the other hand, since the computed p-value of employment status and monthly income are both 0.01 which is less than alpha 0.05 level of significance, the null hypothesis is rejected, therefore, there is a significant relationship in the respondent's extent of use of the LANDBANK Mobile Banking Application when grouped according to employment status and monthly income.

This implied that the respondents' employment status and monthly income had a significant relationship to their extent of use of the LANDBANK Mobile Banking Application. Demographic factors also played an important role in shaping internet banking behavior. This was based on the study of Mitengesanwa & Mauchi (2013) where it showed that the perception toward the use of internet banking differs by age, gender, income, occupation, education level, and other demographic factors. Likewise, Shrestha et al. (2020) also discovered significant correlation between perception toward the use of internet banking and factors such as gender, education, income and employment status.

Table 13. Relationship between Demographic Profile of the Respondents to the Extent of Use of the LANDBANK Mobile Banking Application

Demographic Profile	Chi-square value	df	P-value	Interpretation	Decision
Sex	1.37	2	0.50	Without significant relationship	Accept Ho
Age	5.28	3	0.17	Without significant relationship	Accept Ho
Residence	10.86	8	0.21	Without significant relationship	Accept Ho
Marital Status	0.43	4	0.98	Without significant relationship	Accept Ho
Employment Status	23.56	10	0.01	With significant relationship	Reject Ho
Monthly Income	16.55	6	0.01	With significant relationship	Reject Ho

Decision rule:
Reject Ho if the p-value is less than or equal to the level of significance a=0.05.

CONCLUSIONS

The LANDBANK Mobile Banking Application was highly accepted as a platform in conducting banking transactions because of perceived factors such as usefulness, ease of use, trust and security, subjective norms, and compatibility with lifestyle. The factors having the strongest relationship toward behavioral intention of accepting mobile banking were perceived usefulness, ease of use and compatibility with lifestyle.

The respondents using the LANDBANK Mobile Banking Application were not utilizing all of its features. Out of its sixteen features, it was revealed that only two features were always used: Viewing of balance and transaction history for both Deposit account and Credit Card and Fund transfer.

The respondents' level of acceptability of the LANDBANK Mobile Banking Application is related to their age. Hence, the lower the age, the higher the acceptability and vice versa.

The respondents' extent of use of the LANDBANK Mobile Banking Application is related to their employment status and monthly income. Hence, the more gainfully employed, the higher is the extent of use.

RECOMMENDATIONS

1. Mobile banking may be embraced by consumers to adopt advanced technology. Also, consumers may make innovative use of mobile phone technology to help alleviate pandemic-related health worries and other concerns consumers may have regarding banking in person.

2. Banks may increase the security measures to avoid the hesitance of the users to use Mobile Banking. Moreover, they may create adequate awareness especially among the non-users about the available mobile banking services offerings through social media platforms, news or leaflets in their various banks. They may conduct more demonstration and training sessions in using and learning to avail the services to further educate the users especially the elderly.

3. Future researchers may conduct a large-scale study with more representative samples to validate the factors of this study and to enhance the generalizability of the research conclusions. Also, they may conduct the same study in other public and private banks in the Philippines to have an in-depth understanding towards consumer perception in mobile banking.

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INCLUSIVE EDUCATION IMPLEMENTATION IN PUBLIC ELEMENTARY SCHOOLS IN ILOCOS NORTE, PHILIPPINES

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ABSTRACT

This study assessed the level of inclusivity of the different elementary schools in the Division of Ilocos Norte, Philippines, and determined the challenges met by the 45 teachers in implementing inclusive education chosen through total enumeration with the use of survey questionnaire sent thru Google forms, undertaken from January to June 2020. Moreover, the level of inclusivity of the different public elementary schools in Ilocos Norte was assessed along different indicators. Furthermore, the differences on the relationship of the variables were also established. The frequency distribution, percentage, weighted means, five-point Likert scale and F-test were statistically used in this study. In general, there is a very high level of inclusivity in the different public elementary schools that cater children with special needs in the division of Ilocos Norte. Specifically, the schools were assessed to have very high inclusivity along school policies and administrative support, school environment, teacher skills, knowledge and attitudes, pupils, academic content and assessment, special subject areas/extra-curricular activities and community involvement. On the other hand, the respondents' assessment showed a high level of inclusivity among schools in terms of teacher development. The most pressing concern of the teachers involved in delivering inclusive education in the Division of Ilocos Norte is the lack of training on inclusive education.

Keywords: challenges, inclusive education, Ilocos Norte, Philippines, Public Elementary Schools

INTRODUCTION

All children, including those with disabilities, have a right to education. This right is included in Philippine Law in the Magna Carta for Persons with Disabilities (1992). As a matter of fact, Convention on the Rights of Persons with Disabilities (UNCRPD), inclusive education has been recognized as a more beneficial way of ensuring that children with and without disabilities achieve their full educational potential. Inclusive education has become the focus of many educational policies, not only in the Philippines but also in many Considering the in the Article 24 of the United Nations very diverse set of learners whose needs also are diversified, inclusive education serves as the main catalyst to promote quality education for all (Operationally defined by the researcher). It is basically about nurturing and educating all learners, making them feel the sense of belongingness regardless of their differences in ability, culture, gender, language, class, and ethnicity (Kozleski, et.al, 2007). Inclusive education, therefore, is about providing a learning environment where children with and without disabilities are taught together, as equals.

The practice of inclusive education in Philippine basic education is largely determined by the Department of Education Order No. 72, s. 2009, an outdated directive which does not specify a stable, clear, and definite process of including CSN in the general education setting. A move to effect high-quality inclusion in Philippine schools is said to be underway, but at present, the Special Education Act (Philippine Senate Bill 3002), which is supposed to determine the practice of inclusion in general education schools, is still under review at the Philippine Senate. The continued delay of this bill's passage into law and which standards should be met in its implementation are issues that continue to defy definitive resolution (Muega, 2016). As a result, the Philippine Department of Education reports that only 2% of children with disabilities (CWDs) are currently able to access educational opportunities and of those who do, drop-out rates are high because of the barriers of accessibility and discrimination they face. With this, it can be said that most of the children with special needs in the country grow up without a decent education, in spite of their potential talents and abilities, thus making it much more challenging for people with disabilities to access employment opportunities and to live independently and achieve their potential later in life.

It is important to note that inclusive education as an approach is different from more traditional approaches to the education of children with disabilities that involve segregating children with special needs into separate classes or even separate schools. According to Bert Hofman, World Bank Country Director to the Philippines, the segregated system is very expensive and hasn't gone

far yet, hence DepED should train school administrators and teachers on how to handle children with disabilities and programs for children with disabilities must be included in the mainstream education system. Such statement highlights the importance of the role of teachers as well as school administrators in inclusive education. As such, research indicates that teachers play a critical role in the implementation of inclusive education (Forlin et al. 2010). The ways in which teachers accept inclusive values affect, for example, on learners' adaptive academic and behavioral functioning at school. Children with special needs who like and trust teachers, and who are liked and trusted by their teachers, are more motivated and better supported to engage at school, behave pro-socially and succeed academically. With inclusive education as one of the priorities of the Department of Education to achieve the goals of Education for All (EFA), the different public schools in the Division of Ilocos Norte have been catering to the needs of children with special needs. However, in order to improve and strengthen the implementation of inclusive education in this part of the nation, there is a need to determine the challenges observed and experienced by the teachers who serve as the main implementers of such approach. It is along with this premise that this study was conceived. This way, policy recommendations and improved plans for implementing inclusive education can be made to ensure that schools, especially the public elementary schools, are really responsive to the needs of children with special needs for them to have equal access to quality education for all.

Objectives of the Study

This research study assessed the level of inclusivity of the different elementary schools in the Division of Ilocos Norte, and it also established relationship on the level of inclusivity when grouped according to school assignment and selected demographic the profile variables of the respondents.

METHODOLOGY

Research Design

The descriptive survey research design was used in describing the level of inclusivity and the challenges met by teachers in the different public elementary schools in the Division of Ilocos Norte. A description of the profile of the teachers in terms of their age, sex, civil status, highest educational attainment, and frequency of training on inclusive education was offered. Furthermore, the challenges met by the teachers in implementing inclusive education in their respective schools, and the result of the test of difference on their challenges and assessment on the level of inclusivity of their schools

was also described in this study. The descriptions are then presented by reporting the frequency or percentage of persons reporting each response.

Research Locale

This study was conducted in the elementary schools of Bangui, Pagudpud, Burgos, Pasuquin and Bacarra districts in public elementary schools within the Schools Division of Ilocos Norte.

Respondents and Sampling Procedure

Only the schools that cater to children with special needs (CSN) in the Division of Ilocos Norte were considered in this study, hence a complete enumeration of forty-five (45) teacher respondents was employed.

Research Instrument

The survey questionnaire was the primary tool used to gather the data needed for this research: a survey of the profile of the teacher-respondent; the indicators to assess the level of inclusivity of the different public elementary schools; and the statements regarding the challenges of the teacher-respondents as regards the implementation of inclusive education. The Part II of the survey questionnaire has been adapted from the Inclusive, Learning Free Environment Self-Assessment Form found in the UNESCO Toolkit on Inclusive Education utilizing the 5-point Likert Scale.

Data Gathering Procedure

Permission to conduct the study was sought from the Public Schools Division Superintendent of the Division of Ilocos Norte, from the Public Schools District Supervisors and also from the principals of the different public elementary schools within Ilocos Norte. The instrument was sent to the respondents through a Google Form for them to accomplish online. Probing the responses and gathering supporting responses was done through chat messages in the FB messenger.

Statistical Treatment

The data gathered from the different respondents through the use of questionnaire were recorded, summarized, tabulated, analyzed and interpreted through the use of some selected statistical tools such as frequency distribution, percentage and weighted means.

The profile of the teacher-respondents was analyzed using frequency counts, percentage distribution and weighted means. Moreover, frequency counts, percentage distribution and weighted mean were used in the analysis of the responses as regards the level of inclusivity of the different public elementary schools in the Division of

Ilocos Norte. This was aided by a 5-Point Likert Scale as follows:

Note that the descriptive values were used in the responses of the respondents in the survey questionnaire while the transposed value were used in discussing the level of inclusivity:

Point	Range	Descriptive Value	Transposed Value
5	4.21 – 5.00	Strongly Agree	Very High
4	3.41 – 4.20	Agree	High
3	2.61 – 3.40	Moderately Agree	Moderate
2	1.81 – 2.60	Disagree	Low
1	1.00 – 1.80	Strongly Disagree	Very Low

Frequency count was used in treating the data on the challenges met by the teacher-respondents in implementing inclusive education, the result was then ranked from the most pressing concern to the last.

Finally, the F-test, on the other hand was used in finding out if there are any significant differences on the assessment on the level of inclusivity when grouped according to profile variables and school assignment.

RESULTS AND DISCUSSION

Assessment of the Level of Inclusivity of the Different Public Elementary Schools in Ilocos Norte

The table presents the summary of assessment on the level of inclusivity of the public elementary schools in the division of Ilocos Norte. The result shows that the elementary schools in Ilocos Norte that cater students with special needs have a "very high" level of inclusivity as suggested by the overall mean of 4.27. Generally, based on the assessment of the teacher-respondents, the schools are inclusive along almost all areas, except for the area on teacher development wherein the total mean of 4.05 indicated that the schools are found to be of "high" level along this factor. Going back to the profile of the respondents, they seem to be in need of more trainings or more professional development opportunities for them to learn more about effective practices in implementing inclusive education.

School Policies and Administrative Support.

The level of inclusivity of the public elementary schools in the Division of Ilocos Norte when it comes to school policies and administrative support is "very high". Evidently, most of the indicators along this area were rated very high by the respondents with the third and sixth statements receiving the highest mean of 4.53. This finding shows that the administrators as well as the teachers of public elementary schools in Ilocos Norte value the importance of inclusive education. One way of showing this is by encouraging all parents in the community to enroll their children who are already of school age, and this kind of campaign is usually

conducted during early registration periods and Brigada Eskwela seasons.

The schools also emphasize inclusivity in the education they provide to the learners as captured in the school's mission and vision statements. This is in support to the policy of the Department of Education as regards inclusive education. As such, the respondents recorded a mean of 4.36 on their responses for the statement "The school administration has a mission and/or statement and policies about inclusive, learner friendly education, including a policy against discrimination. With the existence of such policies, the public elementary schools in Ilocos Norte are able to bring learners with special needs into the mainstream without having discriminated by their fellow learners, teachers or anyone in the learning community.

Handling a class with children having various learning needs and with some having special needs is indeed a great challenge for teachers. However, a strong support from the school administration can help the teacher achieve success in the classroom. In order, therefore, to ensure inclusivity in the delivery of education, the teachers have to be empowered as facilitators of the learning process. In line with this, the statement which says, "The school administration provide flexibility to teachers to pursue innovative teaching methods for helping all children to learn" was rated with a mean of 4.33 which indicates that the schools have very high level of inclusivity in terms of administrative support to teachers so that they can provide the specific learning needs of each individual learner.

The connection between the school and the outside community, including its various networks in the field of education, plays a vital role in achieving inclusivity in the schools. This is assessed as "very high" by the respondents as shown in the mean of 4.31 for the statement, "The school administration has links with the community, is responsive to the needs of the community, and provides opportunities for exchanging ideas to bring about positive changes in inclusive practices."

Furthermore, it was found out that the public elementary schools have existing records of all school-age children as shown in the mean of 4.22 for the statement "the school administration has a master list of all school-age children in the community, whether enrolled or not", thus denoting a "very high" level of inclusivity along this area

considering that the school keeps track of all children who should be studying.

On the other hand, indicators 4, 5, 7, 8, 11 and 12 were rated "High" by the respondents with weighted means ranging from 3.87 to 4.18. Their responses to these statements denote that the school administration is updated on policies and practices that affect the delivery of inclusive education in their respective schools. Results also show that the public elementary schools in the Division of Ilocos Norte have determined possible barriers that could hamper inclusivity in the classroom and that they have ready solutions to eradicate them. The support given by the administration is also recognized by the respondents and this includes the supervision and monitoring mechanism which the administration of each school conducts in order to ensure that inclusive practices are indeed implemented in their respective schools.

Teacher Skills, Knowledge and Attitudes

In terms of teacher skills, knowledge and attitudes, twelve out of fourteen statements were described as "very high" as assessed by the respondents. The total mean of 4.41 suggests that the schools which cater learners with specials needs posit high level of inclusivity when it comes to the skills, knowledge, and abilities of the teachers when it comes to delivering inclusive education to all their learners.

Having the highest mean of 4.67, the indicator "The teachers are able to work as a team" has been described as "very high". This shows that the teaching staff in the public elementary schools value teamwork as an important element in implementing inclusive education in Ilocos Norte, thus they strive to work harmoniously and cooperatively with each other to achieve common goals. All teachers who are in inclusive classrooms need to be committed to the idea of inclusion and be willing to work together to make it successful. The faculty needs to work as a team to make sure that the needs of every learner is being met and that all learners are being supported in reaching their maximum potential, as stated by Voltz, Brazil, and Ford (2001). By working together, teachers are more likely to create more diverse, engaging lessons for pupils who have a wide range of 'abilities, interests, and intelligences, according to Villa and Thousand (2003). They will also be able to discuss their different instructional and assessment techniques.

The mean of 4.60 for indicator number 2 which is described as "very high" clearly identifies the belief of the teachers that all children can learn the basic curriculum offered in the school if given equal opportunity to do so. This is further supported by their response to item number 6 with a mean of 4.47 indicating therein that the schools have "very high" level of inclusivity as manifested by the teachers' "high expectations for all children and that they constantly encourage them to complete their schooling. When it comes to the support given to teachers such as regular medical examinations, the

data shows a mean of 4.56 for the indicator number 5. This is seen as a way to boost the attitude and morale of the teachers so that they can better serve their pupils.

Furthermore, the contextualization of lesson content and the teachers' ability to suit the teaching strategies with the needs of the pupils make it certain that all learners are altogether benefitted by the basic education curriculum. This is evident in the response of the respondents to the item which states "The teachers use content, language, and strategies in their teaching that help all children to learn" recording a mean of 4.53 or very high. As such, the teachers have a "very high" level of inclusivity when it comes to their skills and abilities in "adapting curriculum, lessons, and school activities to the needs of children with diverse backgrounds and abilities" with a mean of 4.42. The teachers' skills in assessing learning outcomes had also been found to show "very high" level of inclusivity as reflected in the indicator number 12, "The teachers can assess children's learning in ways that are appropriate to the children's abilities and needs.

The findings also reveal that the teachers are knowledgeable about inclusive education as shown in their response to the indicator which states that "The teachers can explain the meaning of "inclusive" and "learning-friendly" education and can give examples of inclusive practices" which received a mean of 4.32 or "very high". It is pointed out by this result that inclusive education is not a new term for the teachers in the different public elementary schools in the Division of Ilocos Norte.

Moreover, the indicator "The teachers are reflective and open to learning adapting, experimenting, and changing" received a mean of 4.47 which only shows that these teachers also try to explore various inclusive practices in their classrooms. Aside from that, the results also show that the teachers are aware about available learning resources that can be used by learners with special needs.

Meanwhile, there are two indicators that were described as "high" along this area. These are "The teachers know about diseases that cause physical, emotional and learning disabilities; and can help unhealthy pupils to get proper care" and " The teachers can identify culture and gender bias in teaching materials, the school environment, and their own teaching and can correct this bias", both having the same mean of 4.18. The findings denote that although the teachers may have the ability to determine any biases that exist in the learning resources and even in the learning environment, they still are still trying their best to correct this biases, although it may not be that easy because some of these preconceived biases in the society, such as stereotyping, really require more time and effort to correct.

Teacher Development

Only the indicator which says, "The teachers receive on-going support from school

administrators through regular observation and a written supervisory plan" received a mean of 4.27 which is described as "very high". All other indicators in terms of the respondents' assessment on the level of inclusivity along teacher development were rated "high". The presented findings presents a picture of what needs to be improved in order to ensure effective implementation of inclusive education in the different public elementary schools in the division of Ilocos Norte – that is provision of teachers' development opportunities for delivering inclusive education practices. As shown in the survey of the respondents' profile, there are only a few teachers who have attended trainings related to inclusive education.

On the other hand, the total mean of 4.05 shows that the different public elementary schools in Ilocos Norte have "High" level of inclusivity in terms of teacher development. This is so because the school administrators try to augment the lack of training on inclusive education with other ways that would make the teachers feel that they are being helped and are given support in implementing inclusivity in their schools.

Learners

Inclusivity is important because it promotes the education of all pupils equally, no matter their race, sex, religion, or any other factor. The assessment of the respondents on the level of inclusivity of the different public elementary schools in Ilocos Norte in terms of pupils shows that the total mean for the seven indicators along this area is 4.33 and this has been described as "Very High". This only shows that there is a very high level of inclusive education and that it is evident that all pupils, regardless of any challenges they may have, are placed in age-appropriate general education classes that are in their own neighborhood schools to receive quality education, interventions, and supports that enable them to meet success in the core curriculum. Successful inclusive education happens primarily through accepting, understanding, and attending to learners' differences and diversity, which can include physical, cognitive, academic, social, and emotional aspects. The driving principle is to make all learners feel welcomed, appropriately challenged, and supported in their efforts. This is clearly shown by the assessment of the respondents on the indicator "Children with diverse backgrounds and abilities have equal opportunities to learn and to express themselves in the classroom and at a school" which received a mean of 4.56 and a descriptive value of "very high". In addition to this, the respondents indicated a "very high" assessment on the item "All school age children in the community attend school regularly" with a mean of 4.31, and with the statement "All children have equal opportunities to participate in all school activities."

The involvement of the learners in policy crafting on inclusivity is also important in achieving inclusivity. In line with this, there is a "very high" level of inclusivity as shown in the respondents'

responses to the item "All learners help to develop guidelines in the classroom and in the school regarding inclusion, non-discrimination, violence and abuse. This means that there is active participation and exposure of the learners in determining what needs to be done in order to make inclusivity work for them. The only limitation to this is that only those belonging in the higher grade levels and the officers of the Supreme Student Government are more involved to this kind of participation.

Meanwhile, there are two items that received the same descriptive value of "high". These are "All children are followed up if their attendance is irregular", and "All pupils have textbooks and learning materials match their learning needs" with weighted means of 4.13 and 3.93 respectively. The data reveal the reality in the public schools wherein there is difficulty in regularly following up on the reasons why pupils commit absences. However, as per interview with some of the respondents, most of them try their best to reach out to the parents whenever they notice irregularities in the class attendance of certain pupils. On the contrary, the voluminous works of public school teachers also hinder some teachers to regularly do the same. Furthermore, it is a common and factual observation that there is a lack of learning resources and materials in the public schools and this is the underlying reason why it is difficult to provide all learners with textbooks and other learning resources, thus affecting the inclusivity in the schools.

Academic Content and Assessment

Children learn in a different ways because of hereditary factors, experiences environment or their personalities. Consequently, teachers need to use a variety of teaching methods and activities to meet the different leaning needs of our children, hence it is important to make the academic content and assessment method fit with the needs of the pupils. In connection to this, the assessment of the respondents on the level of inclusivity of the public elementary schools in Ilocos norte in terms of academic content and assessment is very high.

Notice that all indicators along this area were given the descriptive value "very high" with means ranging from 4. 22 up to 4.47 resulting to a total weighted mean of 4.36 which describes the level of inclusivity along academic content and assessment as "very high" among the public elementary schools surveyed in this study. The very high level of inclusivity among these schools is mainly because of the implementation of the K to 12 Basic Education curriculum in the country. As stipulated in DepEd Order No. 21, series of 2019, inclusion is the key standard and principle of the K to 12 curriculum and its actualization is supported by other standards and principles that further describe the features of an inclusive curriculum which include being learner-centred, developmentally appropriate, culture-sensitive, relevant, gender-responsive, and contextualized. Thus, it is further highlighted in the

guideline that Inclusive Education is at the core of the K to 12 curriculum and is embedded in the curriculum framework itself. This is demonstrated by the Mother Tongue-based Multilingual Education (MTB-MLE) policy for Kindergarten up to Grade 3 which allows the teachers to contextualize the academic contents.

As regards assessment, the indicator which states, "Teachers have various assessment tools to measure pupils' knowledge, skills and attitudes, rather than only depending upon examination scores" gained a mean of 4.47 which was described as "very high". As stipulated in DO 21, s. 2019, the teachers are required to use inclusive assessment. Inclusive assessment provides learners with varied opportunities to test their mastery of competencies and enables them to participate in several types of activities that enhance their understanding of concepts and ideas. Hence, classroom assessment takes into account the needs of all learners through the use of varied assessment strategies, methods and tools/equipment such as oral and written tests, multiple questions, group presentations, self and peer assessment, role play, creation of audio-visual materials, performance, diaries and portfolio.

Special subject Areas/Extra-curricular Activities

The public elementary schools in Ilocos Norte have a "very high" level of inclusivity when it comes to involving pupils in special subject areas or extra-curricular activities based on the total mean of 4.28 for the eight indicators along this area.

It is important to note that SPED or children with special needs should be put in the mainstream in order to make inclusivity work in the system. This includes recognizing also their abilities or talents which they can manifest or showcase in special subject areas such as music, art subjects, dance lessons, and even in extracurricular activities. Many kids with special needs also have impressive talents, regardless of learning disabilities, social issues, or speech delays they may be dealing with. But that doesn't mean they can't run like the wind, draw like Picasso, or be a successful Girl or Boy Scout. This is captured in items 5 and 7 which received the highest mean of 4.58 indicating that, indeed, the public elementary schools recognize the talents or abilities of all learners.

It can be noticed that among the eight statements, there are three that were rated "high" only by the respondents as compared to the indicators which were described as "very high". These are items 1, 2 and 4 which recorded means of 4.13, 4.07, and 3.91, respectively. The findings suggest that although the teachers try their best to bring the pupils in the mainstream, there are still rooms for improvement. For instance, there are children with special needs who, even when put in a regular class, still need extra care and support from the teachers. Take for example the case of a deaf pupil in one of the elementary schools in the division. His teachers are very much willing to put him in the mainstream, however, the school lacks necessary materials or equipment to help him participate in a regular class, in special classes, or even in extracurricular activities. This is one situation when inclusivity poses a challenge to the teachers.

Community Involvement

The public elementary schools in Ilocos Norte that cater SPED and CSN were found to have "very high" level of inclusivity when it comes to community involvement as shown in the total mean of 4.27. School–community partnerships play an essential role in successful schools, often providing supports and resources to meet staff, family, and student needs that go beyond what is typically available through school. Reciprocally, community partners benefit from their relationships with schools, including learning about schools' inclusive culture.

Involving parents and the community is an important principle of achieving quality education, both in and out of the classroom. It is even more relevant in the case of inclusive education, and this is reflected in the indicators "Parents receive information from the school about their children's attendance and achievement "with a mean of 4.56 and the indicator "Parents and community groups know about inclusivity and are able to help the school become an inclusive school" with a mean of 4.22, both having been described as "very high". The two indicators clearly suggest that the schools have strong partnerships with the parents as well as with the other community stakeholders as they are their counterparts in providing inclusive education to all the children within the community. The constant and open communication which the schools maintain among its stakeholders allows them to be able to seek for assistance in order to effect better implementation of inclusive education. For instance, the community people, like the Barangay Council of every barangay usually helps the school administration and teachers in making sure that all children in their respective localities are enrolled so that there would be 'no child left behind' when it comes to the education of the young people in the community.

Table 1. Assessment on the level of inclusivity of the different public elementary schools in Ilocos Norte.

Areas of Inclusivity	TOTAL MEAN	DESCRIPTIVE VALUE
1.School policies and administrative support	4.22	Very High
2.School environment	4.23	Very High
3.Teacher skills, knowledge and attitudes	4.41	Very High
4.Teacher development	4.05	High
5. Pupils	4.33	Very High
6.Academic content and assessment	4.38	Very High
7.Special subject areas/extra-curricular activities	4.28	Very High
8. Community	4.27	Very High
OVER ALL MEAN	4.27	Very High

Difference on Level of Inclusivityof the Different Public Elementary Schools in Ilocos Norte When Grouped According to Their Profile

Table 3 presents the difference on the assessment of the respondents on the level of inclusivity of the public elementary schools in Ilocos Norte when the respondents are grouped according to their profile.

It can be gleaned on the table that the assessment of the respondents on the level of inclusivity of the schools differ when they are grouped according to their extent of attendance to trainings relevant to inclusive education. This is statistically shown by the f-value of 6.333 which is found significant at .001 level of significance. As manifested by the data, the teachers' exposure to trainings affect how they view and assess the implementation of inclusive education in their respective schools. This suggests that when there is a more frequent attendance of a teachers in more trainings about inclusive education, the higher would be his or her assessment on the level of inclusivity of the schools because they believe that their attendance to such trainings would improve their abilities to implement inclusive education practices for their learners with special needs.

The other profile variables were found not to be significant. This denotes that the teachers' assessment on the level of inclusivity of the schools do not vary regardless of their age, civil status, and sex.

With this result, the hypothesis stated as 'there is no significant difference in the challenges met by the teachers when grouped according to their profile variables' is rejected

Table 3. Difference on the assessment on the level of inclusivity of the different public elementary schools in Ilocos Norte when grouped according to their profile of the respondents.

	MEAN	F- value	P-value	F- critical	REMARKS
AGE					
22-28	4.40				
29-35	4.30				
36-42	4.54	1.553637	0.195989	2.455831	NS
43-49	3.97				
50-56	4.28				
57-63	4.42				
CIVIL STATUS					
Single	4.36				
Married	4.28	1.124368	0.334439	3.219942	NS
Widow/Widower	3.87				
TRAININGS ATTENDED					
Mental Health	4.00				
GAD	4.38				
Division Training on Contextualization/Indigenization of the Curriculum	4.33				
In-Service Training Seminar	4.58				
Making Learning Meaningful Through Inclusive Education	4.64				
National Training of Trainers for Inclusive Education	4.35	6.333333	0.000001	2.349027	**SIGNIFICANT**
National Training of Trainers for Teachers Handling Autism	4.35				
International Training Workshop on Special Education	4.35				
Division Training Workshop on Teaching the K to 12 Standards with Technology for a Transformative Learning Environment	4.48				
Division Training on Inclusive Education for School Administrators/Supervisors, SPED and Regular Teachers	3.99				
SHDP	3.89				
None	4.25				
SEX					
		t-value	p-value	t-critical	REMARKS
Female	4.28	-0.14757	0.883371	2.016692	NS
Male	4.31				

Difference in the Assessment of the Teacher-Respondents on the Level of Inclusivity of the Different Public Elementary Schools In Ilocos Norte when Grouped According to School Assignments

The statistical result in Table 4 clearly suggests that there is a significant difference in the assessment of the respondents in the level of inclusivity of the public elementary schools in Ilocos Norte when they are grouped according to their school assignments. This is evident in the f-value of 2.24563 with P-value of 0.04785 and F-critical value of 2.20587. As reflected in the table, the teachers in San Isidro Elementary School recorded the highest mean for their assessment on their school's level of inclusivity, while teacher in Naglicuan Elementary School have the lowest mean in their evaluation. The data could denote that the teachers' assessment on the level of inclusivity depends on their degree of participation in the inclusive education practices. Although all the participating schools cater to children with special needs (CSN), they do not have the same number of CSNs, more so they do not have their same kind of CSNs. Hence, this explains such difference on the teachers' assessment in the level of inclusivity of the schools.

Since finding is significant, the hypothesis which states that there is no significant difference in the assessment of the teacher-respondents on the level of inclusivity of the different public elementary schools in Ilocos Norte when grouped according to their school assignments is rejected.

Table 4. Difference on the respondents' assessment on the level of inclusivity of the public elementary schools in Ilocos Norte when they are grouped according to school assignment.

Schools	MEAN	F- value	P-value	F-critical	REMARKS
Abaca ES	4.14				
Ablan Community School	4.70				
Adams CES	4.61				
Alao-ao ES	4.13				
Bacsil Elementary School	4.54				
Banban Elementary School	3.87				
Burayoc Elementary School	4.55				
caribquib es	3.38				
Carusikis ES	4.46				
Caunayan Elementary School	3.48				
Dadaeman elementary school	4.38				
Dumalneg Elementary School	4.76				
Gamaban Elementary School	4.58				
Lanao Elementary School	4.51				
Margaay PS	3.58	2.24563	0.04785	2.20587	SIGNIFICANT
Masikil ES	4.23				
Nagbalagan Elementary School	4.19				
Naglicuan Elementary School	3.23				
Paddagan ES	4.93				
Pancian Elementary School	4.31				
Pasaleng Elementary School	4.58				
Piddig Central Elementary School	4.30				
Sabas Sagisi MES	4.78				
San Isidro Elementary School	4.96				
Saud Elementary School	4.06				
Special Education Center	4.35				
Sta. Cruz ES	4.09				
Subec Elementary School	4.01				
Suyo Elementary School	4.23				

CONCLUSIONS

Based on the foregoing findings, the following conclusions were derived:

Teachers who deal with children with special needs in the different public elementary schools in the Division of Ilocos Norte lack necessary professional development and trainings in order to be more responsive to inclusive education.

Although the assessment on the level of inclusivity of the public elementary schools in the division is very high, the challenges met by the teachers in implementing inclusive education counter the result as the problems that surfaced in the study present the barriers that hinder the more effective implementation of inclusive education.

Teachers who have lesser or no attendance to trainings on inclusive education tend to have higher assessment on the level of inclusivity of the schools as they assume that what they observe in their respective schools are enough to ensure inclusivity.

Those who have been dealing with more children with special needs in their schools tend to find their schools as very highly inclusive.

RECOMMENDATIONS

Considering the findings and conclusions of this study, the following are hereby given as recommendations by the researcher.

1. All school administrators of public elementary schools in the division of Ilocos

Norte should implement a professional development plan for all teachers to be trained along inclusive education.

2. The Department of Education in the Division of Ilocos Norte may want to consider adopting the policy recommendations developed in this study in order to further enhance the capability of public schools in delivery effective and quality inclusive education in the province.

3. Another study analysing the effectiveness of schools in implementing inclusive education among children with special needs may be conducted after implementing the policy recommendations or after capacitating the teachers and administrators along inclusive education.

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PODCAST-BASED PHONEMIC INSTRUCTION:ITS EFFECTIVENESS IN DEVELOPING PHONEMIC AWARENESS ON [ɔ] AND [ʊ] OF SENIOR HIGH SCHOOL STUDENTS

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ABSTRACT

This study was carried out to determine the effectiveness of podcast-based phonemic instruction in developing phonemic awareness on /o/ and /u/ among 30 Grade 11 Senior High School students of Claveria School of Arts and Trades (CSAT). A Quasi-Experimental research design that utilizes a pretest-posttest was used. The effectiveness of podcasts in developing the phonemic awareness on /o/ and /u/ among an experimental group and a control group at CSAT was assessed through a pre-reading activity and a post-reading activity using sets of words which focus mainly on emphasizing [ɔ] and [ʊ]. Mean, variance, and t-test were applied to describe the collected data and make inferences as well. Findings revealed that control and experimental groups had comparable level of phonemic awareness on /o/ and /u/ sounds before the conduct of the study. After their exposure to podcast-based phonemic instruction, students from the experimental group obtained higher gain scores compared to that of the control group which was not exposed to this intervention, and subjected only to modular approach. In light of the study findings, it is recommended that educational institutions integrate podcast-based instruction as a means to enhance phonemic awareness and actively engage students. By integrating podcast-based instruction and providing necessary training, educational stakeholders can harness its potential to enhance phonemic awareness and improve language learning outcomes among students. Further research and long-term studies will contribute to a deeper understanding of its effectiveness and sustainability in different educational settings.

Keywords: podcast, phonemic awareness, phonemic instruction, pre and post reading, quasi-experimental

INTRODUCTION

Many young learners in Claveria lack phonemic awareness as they enter kindergarten. Indeed, few are conscious that sentences are made up of individual words, let alone that words can be segmented to phonemes. By entering high school, many (but not all) carry this problem with them. The greatest difficulty in learning to read English among the learners of Claveria is being posed by their inability to recognize, understand, and manipulate /o/ and /u/ sounds on their own (thru- fl**u**; **o**n- **o**nly) and in combination with many other letters. Since English is not the native language of its residents, one may sense how challenging it is to develop phonemic awareness when they have not yet mastered reading in their mother tongue. Yet phonemic awareness is not being acquired naturally as one learns to speak. The conjecture of many claims that beginning readers in Claveria perform poorly on phonemic awareness involving /o/ and /u/ reading tasks that require phoneme manipulation. "The effects of training phonemic awareness and learning to read are mutually supportive. Reading and phonemic awareness are mutually reinforcing: Phonemic awareness is necessary for reading, and reading, in turn, improves phonemic awareness still further" (Shaywitz, 2003).

Many English spellings have more than one pronunciation and make numerous relatively common words tricky for beginning readers. "Since pronunciation habits are formed early, it seems obvious that it is at that point that the development of a good pronunciation should be emphasized" (Schutz, 2019).

"Pronunciation of the letter sounds in words as well as syllable emphasis on parts of words will more often than not change the words meaning and context drastically thereby irreversibly altering the meaning of the sentence being communicated" (English Club TV Ltd.,2021).

The **letter o** or combinations with **o** and the letter **u** or combinations of **u** are particularly confusing for English readers in Claveria because they have different, sometimes overlapping pronunciations. The pronunciation of /o/ and /u/ among Claverianos is the common mistake observed by its other neighboring town, Sanchez Mira, though according to them, it is already a part of the town's culture. In some instances such as seminars, where a certain Claveriano would speak, people could immediately distinguish that he/she is from Claveria because of the mispronunciation of the /o/ and /u/. Hence, discrimination and bullying arise.

The researcher noted that the errors of **/o/** and /u/ pronunciation that learners of Claveria make are systematic and not accidental. Thus, mispronunciation of sounds was explored. The research sought to address the problem of **u** and **o** mispronunciation with the use of podcast-based

phonemic instruction. This study was an attempt to test the effectiveness of podcast on the pronunciation of **o** and **u** sounds among the learners of Claveria since it's a part of a strong, direct and systematic phonics instructional approach to directly help learners develop proficient reader phonologic processing pathways.

The researcher chose to exclusively involve Senior High School learners and attempted to encourage early detection and correction of pronunciation for the healthy development and nurturing of this important foundation. Furthermore, the researcher aimed to bend the erroneous way of pronouncing **o** and **u** among Claverianos.

After decades of research, language technologies finally entered the mass market in the fall of 2011 with the release of the iPhone 4, whose main innovation was the introduction of Siri- the virtual, speech-directed personal assistant. As people become more comfortable with speech interfaces, a growing trust in their use for pedagogical purposes is expected.

Although there may have been published studies about the use of podcasts in the delivery of instructions, the researcher attempted to study its effectiveness as a powerful medium in highlighting the experience of making knowledge and leading listeners to desirable results in pronouncing /o/ and /u/ in a Claveriano context. If this study would have not been conducted, "students who cannot hear and work with the phonemes of spoken words will have difficulty learning how to relate these phonemes to letters when they see them in written words" (Houston, 2020). Moreover, discrimination on people of Claveria would still continue.

Objective of the Study

This study determined the effectiveness of podcast-based phonemic instruction in developing the /o/ and /u/ phonemic awareness among Senior High students of Claveria School of Arts and Trades (CSAT) in Claveria, Cagayan, Philippines..

METHODOLOGY

This chapter presents a description of the methods used, the respondents of the study, the data gathering instruments, data gathering procedure and the statistical tools used in treating the data for the study.

Research Design

The research design employed in this study was a non-randomized control group design using a pretest-posttest framework. The main objective was to determine the effectiveness of podcast-based phonemic instruction and its potential impact on the mean gain scores of correctly producing the phonemes /o/ and /u/ after the experimentation. Participants were assigned to either the control group or the experimental group; however, the assignment was non-randomized. The assessment of

the effectiveness of podcasts in developing phonemic awareness on /o/ and /u/ sounds was conducted through a pre-reading activity and a post-reading activity, focusing on word sets that emphasized [ɔ] and [ʊ]. A comparison was made between the pre-reading and post-reading activities of each group to evaluate the effectiveness of podcast-based phonemic instruction.

Locale of the Study

This study was conducted at the Claveria School of Arts and Trades (CSAT), Centro-1 Claveria, Cagayan. CSAT is a tech-voc school established in 1967. It is geared at training and producing graduates prepared for the various occupational needs in the world of work.

It caters to junior and senior high schools in Claveria and nearby towns. Its Senior High School department has a total number of 550 where the samples were taken from.

Respondents and Sampling Procedure

In this study, two intact classes from the Senior High School grade 11 curriculum were selected to form the control and experimental groups. The curriculum consists of 345 students, encompassing various strands such as ABM, Cookery, Hairdressing, HUMSS, Carpentry, STEM, and Automotive Servicing.

To ensure a close resemblance between the control and experimental groups, a quasi-experimental design was implemented, supported by qualitative measures such as a survey questionnaire. This approach facilitated the identification of participants in the control group who closely matched the experimental group in terms of relevant observable characteristics, including age, education, mother tongue, grade in the subject Oral Communication in Context, religion, wealth, attitude o risk, and rate of willingness to participate. Among the respondents, a total of fifteen pairs expressed a high willingness rate of 10/10 to participate in the study. Subsequently, the assignment of participants to either the control or experimental group was determined through a random draw.

The contingency table below summarizes the exposure of participants in the control and experimental groups:

Since this study was conducted within a Claveriano context, it is presumed that the learners reside in Claveria.

Research Instruments

Exposure	Control Group	Experimental Group
Exposed to podcast-based phonemic instruction	0	15
Exposed to printed materials in a modular approach	15	0

The printed reading materials and the podcast were crafted in line with the curriculum guide set by DepEd.

A pronunciation worksheet was read by the participants during the pre-reading and post-reading activities.

Another instrument is the analytic rubric, that was used to assess the students' phonemic awareness development on /o/ and /u/. It is composed of 5 criteria (Phoneme quality, Syllabication, Word Accent, Confidence, Performance). Four levels of proficiency were established, with 15-20 points standing for Exemplary, 8-14 points standing for Proficient, 7-13 standing for Developing, and 1-6 standing for Emerging.

The validity and reliability test of the research instruments were done before the conduct of the study. This was done to ensure that the pre and post-reading materials, the podcast script and file, and the analytic rubric were valid and reliable and had passed the standards of the experts.

Data Gathering Procedure

To protect the participants during the conduct of the study this time of pandemic, it was undertaken by time schedule through face-to-face interaction within the month; hence, the researcher requested the approval of the Principal before the conduct of the study. All possible strategies to gather the data were done in a positive approach. The researcher clearly explained the purpose of the study. This study was conducted from May to June 2022.

The learners' [ɔ] and [ʊ] phoneme reading results for the pre-reading and post-reading was observed and recorded through the use of a Monitoring Chart. This chart showed the growth of the learners in reading [ɔ] and [ʊ] phoneme correctly with and without the application of podcast, thus, proving the effectiveness of the podcast-based phonemic instruction. The researcher reflected the pre-reading and post-reading activity scores of the participants from each of the two groups on the chart. Their reading scores were analyzed and described as follows:

Score	Descriptive Value
15-20	Exemplary
8-16	Proficient
7-13	Developing
0-7	Emerging

The scores that were reflected in the monitoring tool served as the basis in assessing the participants' developed phonemic /o/ and /u/ awareness in the analytic rubric (Vowel quality criterion).

The results of the pre and post-reading activity from the control and the experimental groups were then encoded in the Microsoft excel software. Before the weekdays ended, an interview was conducted to identify the issues and concerns of the students from both groups. Leakage and contamination of the instruments in the two modalities used were avoided to ensure the validity and reliability of the research process.

Statistical Treatment

The relevant data generated from the pre-reading and post-reading activity of the control and experimental groups were collected, tabulated, and subjected to appropriate statistical tools.

Primarily, descriptive statistical tools such as arithmetic mean and variance were employed in determining the mean, gain scores and spread of the scores of both groups. To determine if there is a significant difference between the pre-reading and post-reading activity scores as well as the gain scores of the control and experimental groups, t-test was utilized.

Lastly, independent sample t-test was used to determine the effectiveness of podcast-based phonemic instruction in developing the phonemic awareness on [ɔ] and [ʊ] of the Senior High School Students at CSAT.

RESULTS AND DISCUSSION

Pre-Reading and Post-Reading Activity Scores of The Control and Experimental Group

Regarding the pre-reading and post-reading activity scores of the control and experimental group, the average score obtained by the control group during the pre-reading activity was 24.33, which falls within the satisfactory range. This indicates that the control group demonstrated a moderate level of performance in the pre-reading activity.

On the other hand, the experimental group has an average score of 24.40 during the pre-reading activity, which also falls within the satisfactory range. This suggests that the experimental group exhibited a similar level of performance as the control group in the pre-reading activity.

On the post-reading activity, the average score achieved by the control group was 34.87, reflecting a remarkable performance level. These findings underscore the control group's notable

competence in identifying and manipulating the /o/ and /u/ sounds addressed in the activity. The obtained scores correspond to an outstanding level of achievement, highlighting the control group's impressive phonemic awareness skills. the post-reading activity scores of the experimental group are reported.

The experimental group exhibited a remarkable average score of 38.07, indicating a high level of performance. These findings highlight the exceptional phonemic awareness skills demonstrated by the experimental group in identifying and manipulating the /o/ and /u/ sounds targeted in the activity. The obtained scores reflect an outstanding level of achievement, underscoring the experimental group's impressive grasp of phonemic awareness concepts.

Comparison of Pre-reading Activity Scores of Control and Experimental Group

Table 1 illustrates the comparison of pre-reading activity scores between the control and experimental groups, shedding light on an intriguing observation. The data reveals that the mean score for the control group is 24.40, closely followed by the experimental group with a mean score of 24.33. Importantly, the probability value of .971 indicates that the difference between the two groups is not statistically significant.

This intriguing finding suggests that both the control and experimental groups possessed a similar level of prior knowledge concerning the podcast lesson on /o/ and /u/ sounds. It can be reasoned that this equality in prior ability stems from the shared exposure to the mispronunciation or misinterpretation of these specific sounds. The participants in both groups may have encountered challenges in accurately recognizing and manipulating /o/ and /u/ sounds in words, leading to comparable levels of understanding before the intervention.

The similarity in pre-reading activity scores affirms that the experimental group was as proficient as the control group in terms of their pre-existing ability to grasp the targeted phonemes. Consequently, any subsequent variations observed between the two groups can be attributed to the effects of the podcast-based phonemic instruction rather than disparities in initial aptitude.

In essence, the comparable pre-reading activity scores signify that both groups embarked on the study with a similar foundation, characterized by exposure to potential difficulties in correctly perceiving and pronouncing the /o/ and /u/ sounds. This alignment sets the stage for a comprehensive evaluation of the effectiveness of the podcast-based phonemic instruction in fostering phonemic awareness on /o/ and /u/ sounds among the participants, allowing for a rigorous examination of the intervention's impact.

Table 1. Comparison on the Pre-Reading Activity Scores of the experimental and control group.

Treatments	Standard Deviation	t-value	Critical value	Probability Value
Experimental	6.35	-0.03654	2.14479	0.97137
Control	4.40			

Comparison of Post-reading Activity Scores of Control and Experimental Group

Table 2 presents a captivating story behind the findings, shedding light on the impact of different instructional methods on the post-reading scores of the control and experimental groups. Following a meticulous experimentation process, wherein the control group exclusively received printed text using the modular approach, and the experimental group was exposed to podcast-based instructions, a post-reading activity was administered to assess their phonemic awareness.

The results reveal that the control group obtained a mean score of 38.07, while the experimental group achieved a mean score of 34.87. Notably, there was a significant difference of 3.2 points in favor of the experimental group, as supported by the t-test result. This signifies that the higher mean score attained by the experimental group can be attributed to the utilization of podcast-based phonemic instruction, which effectively developed their phonemic awareness of /o/ and /u/ sounds.

It is important to note that while it is not accurate to claim that one learning method is universally superior to another, different methods can be effective for different learners based on their individual needs and preferences. In this study, podcast-based instruction demonstrated a positive effect on learners who had been utilizing the modular approach throughout the pandemic. The learners, who experienced prolonged periods of lockdown, suddenly returned to school after two years of closure. Given this context, the findings highlight the usefulness of podcasts as a flexible and convenient learning tool, enabling learners to access information in a manner that suits their unique circumstances.

Furthermore, podcasts offer educators an avenue to share their expertise and engage with students in a more personal way, transcending the limitations of traditional instructional methods. The findings of this study underscore the potential of podcasts as an effective medium for knowledge dissemination and learner engagement, particularly during challenging circumstances like the COVID-19 pandemic.

In summary, the significant difference in post-reading scores between the control and experimental groups highlights the impact of podcast-based instruction on enhancing phonemic awareness. The study provides valuable insights into the benefits of utilizing podcasts as a versatile and engaging learning tool, catering to the evolving needs of learners in an ever-changing educational landscape.

Table 2. Comparison of post-reading scores of the control and experimental group.

Treatments	Mean	Standard Deviation	t-value	Critical value	Probability Value
Experimental	34.87	3.09	3.15233	2.14479**	0.00706
Control	38.07	2.28			
**. Correlation is significant at the 0.01 level (2-tailed).					

Comparison of Pre-reading and Post-reading Activity Scores of Control Group

Treatments	Mean	Standard Deviation	t-value	Critical value	Probability Value
PRETEST	24.33	6.35	6.89756	2.14479	0.000007
POST TEST	34.87	3.09			
**. Correlation is significant at the 0.01 level (2-tailed).					

Table 3 shows the comparison of pre-reading and post-reading activity scores for the control group. The post-reading activity mean score of 34.87 reflects a significant increase of 10.54 points compared to the pre-reading activity score of 24.33, as confirmed by the statistical analysis using a t-test.

These findings highlight the effectiveness of the traditional approach in improving the phonemic awareness of the control group regarding the /o/ and /u/ sounds. Despite not being exposed to the podcast-based phonemic instruction, the learners in the control group demonstrated a notable gain in their ability to recognize and manipulate these phonemes. These results align with the findings of Entera (2012), who also observed significant improvements among learners using the traditional approach.

The data in Table 3 reinforces the notion that the traditional approach to teaching can yield notable improvements in learners' phonemic awareness. It showcases the power of conventional instructional methods in developing a solid foundation of phonetic competence, enabling students to discern and manipulate the /o/ and /u/ sounds with greater proficiency. This finding serves as a testament to the enduring efficacy of established teaching practices, affirming their continued relevance in language education.

Furthermore, it is noteworthy to mention that these results are particularly surprising considering the challenging circumstances under which the study was conducted. The research took place during the pandemic, with limited face-to-face classes and the prevalence of remote learning. Despite these obstacles, the significant increase in phonemic awareness among the control group highlights the resilience and adaptability of both the learners and the traditional teaching approach in fostering effective language development. This finding underscores the importance of exploring and harnessing various instructional methods, even during times of crisis, to support students' educational progress.

In summary, the remarkable increase in post-reading activity scores for the control group underscores the significant impact of the traditional approach on the participants' phonemic awareness. It reinforces the idea that even without the utilization of podcast-based instruction, learners can still make substantial strides in their ability to recognize and manipulate /o/ and /u/ sounds. These findings contribute to the body of knowledge in language education, providing valuable insights for educators and researchers seeking effective strategies to enhance phonemic awareness among students.

Table 3. Comparison of pre-reading and post-reading activity scores of the control group.

Comparison of Pre-reading and Post-reading Activity Scores of Experimental Group

Table 4 reveals an intriguing story behind the results, showcasing the transformative impact of the podcast-based phonemic instruction on the experimental group's phonemic awareness of /o/ and /u/ sounds. The post-reading activity mean score for the experimental group soared to an impressive 38.07, a substantial increase of 13.67 points compared to their pre-reading activity mean score of 24.40. Crucially, the t-test analysis confirms the significance of this difference.

These findings highlight the remarkable efficacy of podcast-based instruction in fostering a profound development of phonemic awareness among the experimental group. Through exposure to podcast lessons, students in this group achieved a remarkable gain score of 13.7, attesting to the substantial impact of the intervention. This result aligns with the research of Torgesen and Bryant (1993), who found that learners experience rapid growth in academic performance when provided with intensive, explicit training in phonemic awareness. It also resonates with the work of Artyushina et al. (2011), which affirms the potential of podcasting as a novel technology for enhancing students' listening skills. Additionally, Li (2010) emphasizes that podcasts offer students a more authentic and personalized experience in learning various English language skills.

The data presented in Table 4 underscores the significant contribution of podcast-based phonemic instruction to learners' phonemic awareness. It highlights the power of this innovative approach in facilitating a deep understanding and mastery of the /o/ and /u/ sounds. These findings expand the body of knowledge on the benefits of incorporating podcasting into language instruction, providing educators and researchers with valuable insights into the potential of this technology.

In summary, the substantial increase in the post-reading activity scores for the experimental group showcases the transformative impact of the podcast-based phonemic instruction. The significant gain in phonemic awareness underscores the effectiveness of this approach in fostering a more profound understanding and manipulation of the /o/ and /u/ sounds. These findings contribute to the ongoing exploration of innovative instructional methods in language education and provide meaningful implications for educators seeking effective strategies to enhance phonemic awareness among students.

Table 4. Comparison of pre-reading and post-reading activity scores of the experimental group.

Treatments	Mean	Standard Deviation	t-value	Critical value	Probability Value
PRETEST	24.40	4.40	15.13043	2.144798**	0.0000000005
POST TEST	38.07	2.28			
**. Correlation is significant at the 0.01 level (2-tailed).					

Comparison of Gain Scores between Control and Experimental Group

Table 5 presents an enlightening examination of the gain scores between the control and experimental groups, uncovering valuable insights into the influence of instructional approaches on learners' phonemic awareness of /o/ and /u/ sounds.

The findings reveal that the experimental group, exposed to podcast-based phonemic instruction, achieved a remarkable gain score of 13.67, whereas the control group, solely exposed to the modular approach of teaching, obtained a comparatively lower gain score of 10.53. Importantly, the t-test results establish a significant difference in the gain scores, favoring the experimental group.

These results indicate that learners subjected to the traditional approach obtained a smaller gain score in comparison to those exposed to podcast-based instruction. The higher gain score observed in the experimental group can be attributed to their engagement with podcast-based materials, which likely motivated them to develop their phonemic awareness of /o/ and /u/ sounds. It is worth considering the influence of learners' mother tongue on these results, as learners with certain linguistic backgrounds may experience distinct challenges and advantages when acquiring new phonemic skills. Further exploration of this aspect may provide valuable insights into the differential impact of instructional approaches on learners from diverse linguistic backgrounds.

The statistical analysis presented in Table 8 aligns with the viewpoints expressed by Johnson and Marx (2017), who emphasize the need for instructional tool and approach reforms in teaching. Additionally, research suggests that podcasts offer higher levels of understanding and self-efficacy compared to traditional instructional materials such as textbooks or practitioner articles (Carlisle, Thomas, and McCathren, 2016; McNamara, Brian, and Bittner, 2021).

In summary, the findings from Table 8 unveil a compelling narrative regarding the gain scores of the control and experimental groups. The experimental group, benefiting from podcast-based instruction, demonstrated a substantial gain in phonemic awareness compared to the control group. These results emphasize the significance of integrating innovative instructional tools, like podcasts, to enhance student engagement, motivation, and understanding of phonemic concepts. Furthermore, considering the influence of learners' mother tongue in future research can provide valuable insights into the varying impact of instructional approaches on learners from different linguistic backgrounds. This study contributes to the growing body of research that highlights the importance of instructional reforms, aligning educational practices with the evolving needs of learners, particularly those in the Senior High School setting.

Table 5. Comparison of the gain scores of control and experimental group.

Treatments	Mean	Standard Deviation	t-value	Critical value	Probability Value
CONTROL	10.53	5.91	2.36783	2.14479*	0.03283
EXPERIMENTAL	13.67	3.50			
*. Correlation is significant at the 0.05 level (2-tailed).					

CONCLUSION

There exists a significant difference between the development of the phonemic /o/ and /u/ awareness of control and experimental group after the experimentation and between the gain scores of both groups. In conclusion, the use of podcast-based instruction developed a higher level of phonemic awareness on /o/ and /u/ sounds among the grade 11 learners at CSAT.

RECOMMENDATIONS

In light of the findings and implications of this study, the following recommendations are provided to target specific individuals, organizations, and programs:

1. Language teachers may incorporate podcast-based phonemic instruction in their teaching practices to enhance phonemic awareness and pronunciation skills among students. Also, they may attend professional development programs or trainings to enhance their knowledge and skills in utilizing podcast-based instructional strategies effectively.

2. Curriculum developers may consider integrating podcast-based phonemic instruction into language curricula to promote innovative and technology-enhanced teaching methodologies.
3. Administrators of educational institutions could allocate resources and support the development and implementation of podcast-based phonemic instruction, including providing access to necessary technology and training opportunities for teachers.
4. Future researchers could conduct further studies to explore the effectiveness of podcast-based instruction in different language learning contexts and with diverse student populations.

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