EARIST RESEARCH JOURNAL

"Resiliency in Adapting Technology Amidst the Covid 19 Pandemic"

FOREWORD

The Eulogio "Amang" Rodriguez Institute of Science and Technology takes pride in publishing Volume XXI, No. 30, July – December 2021 of the EARIST Research Journal as it contributes to the attainment of EARIST's Mission, Vision, Goals, and Objectives through scholarly publications.

This volume is the output of researches conducted by EARIST faculty during the Academic Year 2021. This volume highlighted Twenty Three (23) distinct researches in different fields, but most noteworthy, each individual research achievement.

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

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

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

Engr. Rogelio T. Mamaradlo
Director, Research Services

TABLE OF CONTENTS

BEHAVIORAL RESEARCH

Technical

Research

IOT-WI-FI MICROCONTROLLER BOARD WITH CLOUD PLATFORM FOR REMOTE DATA ACQUISITION AND ANALYSIS

Ronald B. Baral
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INTRODUCTION

The process of taking measurements of physical events and documenting them in order to study them is known as data acquisition.

In this study, data acquisition is critical since it will be utilized not only to gather data from various host devices, but also to store that data in the cloud. Data collection mechanisms such as Analog to Digital Converter (ADC), Digital to Analog Converter (DAC), and Universal Asynchronous Transmitter Receiver (UART) would be built into the device with this in mind.

With all of these ideas combined, the team hopes to create a "IoT-Wi-Fi Microcontroller Board with Cloud Platform for Remote Data Acquisition and Analysis," a device that will bridge the gap between hardware and software connected to the cloud, making it much easier for hobbyists, students, engineers, and even professionals to incorporate the Internet of Things into any project.

The gadget seeks to make Data Acquisition technology accessible to anybody without requiring in-depth knowledge of the systems' backbone and architecture.

METHODOLOGY

The study employed a developmental approach. It entails the creation of knowledge with the ultimate goal of enhancing instructional design, development, and assessment procedures. It is based on either situation-specific or generic inquiry techniques. Developmental research is described as "the systematic study of planning, producing, and assessing instructional programs, procedures, and products that must fulfill the criteria of internal consistency and effectiveness," as opposed to basic instructional development (Seels & Richey, 1994, p. 127).

Purposive sampling was employed in this study. Rather than starting with a fixed sample frame, it entails an iterative process of selecting study subjects. The selection process, similar to grounded theory, entails finding themes, ideas, and indications via observation and thought (Schutt, 2006: 348). Schutt emphasizes the necessity of each sample element holding a distinct position in relation to the research project (2006: 155). In this vein, researchers frequently employ an intentional sampling approach to pick informants based on their specific knowledge about and/or experience with the empirical question at hand.

RESULTS AND DISSCUSSION

The total evaluation of the three categories of respondents, namely Students, Professionals, and Community, is shown in the result. The total composite mean has a numerical value of 4.43, which means "Excellent".

SUMMARY OF THE ASSESMENT

Indicators	Students		Professionals		Community		Composite Mean		Rank
	WM	VI	WM	VI	WM	VI	WM	VI	
Functionality	4.37	E	4.63	E	4.47	E	4.49	E	1
Usability	4.30	E	4.50	E	4.50	E	4.43	E	4
Reliability	4.05	VG	4.50	E	4.50	E	4.35	E	5
Efficiency	4.23	E	4.60	E	4.53	E	4.46	E	2
Maintainability	4.20	E	4.60	E	4.53	E	4.44	E	3
Overall Weighted Mean	4.23	E	4.57	E	4.51	E	4.43	E	4.23

Based on the evaluations of Students, Professionals, and the Community, the IoT-Wi-Fi Microcontroller Board was deemed outstanding in terms of functionality, usability, efficiency, and maintainability.

CONCLUSIONS

In this study, the researchers created a device that outperforms existing Data Acquisition devices in terms of Number of Differential Analog Input Channels, Simultaneous Sampling, Analog Input Resolution, Number of Analog Output Channels, Counters/Timers, and Supported Power Input.

RECOMMENDATIONS

Even though the system was successful and functional, the developers provided numerous ideas to increase its potential usage in order to strengthen and improve its performance.

The cost-effective Human Machine Interface solution and code optimization are the most important for ensuring the system's total stability and performance.

SENSORY EVALUATION AND ALCOHOL CONTENT DETERMINATION OF (UVARIA RUFA) SUSONG-KALABAW FRUIT WINE

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Marivir M. Pielago
Rodita Buencuchillo

INTRODUCTION

Wine is an alcoholic beverage extracted from fruit extracts and undergoes fermentation process. It can be a sweet wine, a dry wine or an appetizer wine. Wine is played a major role in the rise and fall of countless individuals, nation and civilization.

The study aimed to develop a new variety of wine using indigenous material which Uvaria Rufa or commonly known as "susong kalabaw". It grows naturally in the Philippines, Laos, Thailand and New Guinea. The fruits which from May to August, are aggregates of round or oblong berries colored deep orange or a rich red. Each contains numerous seeds encased in translucent pulp.

STATEMENT OF THE PROBLEM

The study mainly aimed to produce another variety of wine using Susong-Kalabaw fruit as main ingredients.

Specifically, it sought to answer the following sub-problems.

1.   What are the ingredients, tools and utensils needs in the preparation of Susong-Kalabaw Fruit Wine.

2.   How do the expert and consumer respondents assess the level of acceptability of Susong-Kalabaw Fruit Wine in terms of: aroma/bouquet, body of wine, clarity and flavor?

3.   Is there significant difference on the assessment made by the two groups of respondents on the level of acceptability of Susong-Kalabas Fruit Wine base on the abovementioned variables?

4.   What is the level of alcohol of Susong-Kalabaw Fruit Wine?

METHOD

The study utilized the descriptive method of research. Sources of data obtained from 30 respondents comprising of 20 consumers and 10 experts (wine connoisseurs and QA).

DATA GATHERING INSTRUMENT

The data gathering instrument used in this study was the questionnaire which examined the evaluation of the consumer and expert respondents of the acceptability of the product and determined if the two groups of respondents have the same perception on the acceptability of the product.

RESULTS

Table 1
Summary of Evaluation on the Level of Acceptability of Susong-Kalabaw Fruit Wine

CRITERIA	Expert		Consumer		Composite Weighted Mean	
	WM	VI	WM	VI	WM	VI
1. **Aroma/Bouquet** It has a fruity aroma.	4.10	A	4.45	HA	4.23	LM
2. **Body of Wine** It has a smooth in the mouth feeling.	4.00	A	4.20	HA	4.10	LM
3. **Clarity** It is not cloudy nor dull.	3.60	A	4.05	A	3.83	LM
4. **Flavor** It has a sweet, pleasant flavor	4.00	A	4.25	HA	4.13	LVM
Overall Mean	**3.93**	**A**	**4.24**	**HA**	**4.09**	**A**

Table 1 sums up the evaluation of expert and consumer respondents on the level of acceptability of Susong-Kalabaw Fruit Wine.

These findings signify that Lion's Heart Fruit Wie were Acceptable to the expert and consumer respondents in terms of clarity, body of wine, aroma/bouquet and flavor supported by the obtained overall mean value of 4.09.

Table 2
Results of Significance Difference on the Level of Acceptability of
Susong-Kalabaw Fruit Wine

Criteria	Mean	Standard Deviation	Computed t-value	t-ratio	Decision
Expert	**3.93**	**0.19**	**4.4386**	**Reject H_0**	**Significant**
Consumer	**4.24**	**0.14**			

It could be observed from the results of the statistical treatment, the computed t value of 4.4386 is greater than the critical value of 2.048 at five percent level of significant with 28 degrees of freedom resulted to the rejection of Ho null hypothesis and verbally as significant.

Since we failed to accept the null hypothesis, there is a strong indication that there is a significant difference between the assessment of the expert and consumer respondents on the level of acceptability of Susong-Kalabaw Fruit Wine in terms of its clarity, body of wine, aroma/bouquet and flavor.

As to the Alcohol Test administered by DOST-FNRI it has 14.5% alcohol content. The alcohol content shows that Susong-Kalabaw Fruit Wine is considered as dessert wine because it contains 14 to 21% alcohol and are sweeter and heavier than table wines.

CONCLUSIONS

   1.   Susong-Kalabaw Fruit can be used as a major ingredient in the preparation of wine.

   2.   Susong-Kalabaw Fruit Wine was acceptable to the two groups of respondents.

   3.   There is a significant difference between the assessments of the two groups of respondents on the level of acceptability of Susong-Kalabaw Fruit Wine.

   4.   As per alcohol test, it was found out that Susong-Kalabaw Fruit Wine is under the category of Dessert Wine.

RECOMMENDATIONS

   1.   Use the most accurate and proportional ingredients to improved its quality and to achieved a highly acceptable product.

   2.   Further ageing process should be done to improve the aroma, appearance and bouquet of the product.

   3.   Proper packaging with sealer should be done to avoid oxidation of the product.

   4.   Researchers may subject the product to proximate analysis.

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E – COMMERCE ONLINE SHOPPING PRODUCT REVIEWS USING SENTIMENT ANALYSIS AND OPINION MINING AUTOMATIC CLASSIFICATION

James Darryl D. Bungay

INTRODUCTION

In this modern generation, Internet is very helpful to us it makes our lives more convenient and to make it more useful, we used it into sharing opinion not only in the issues in society but also in reviewing products or services through social media platform and now in any online shopping web-applications. The increased numbers of internet users caused the wide range of sharing information now we have a mass volume of opinionated data available. With the rapid development and popularization of e-commerce businesses, more and more users like to shop on various e-commerce platforms.

Compared with the way of off-line shopping in physical stores, users can shop at anytime and anywhere, and do not have to wait for the weekend to go shopping, which saves time and effort. Moreover, the products on e-commerce platforms are full of varieties and styles, and consumers can buy the desired products without leaving home. Traditionally, we went to mall to bought products but now we can shop in our home by using internet through our smartphones, hassle free. E-commerce businesses are a very popular in competitive industry it is one of the tools for businesses, where you can buy and sell through online transaction and payment using Internet. The growing numbers of people who shop online will take a while for companies to monitored how many people will disliked or liked their product, instead of having manual survey which is a waste of time. Collecting the opinion of previous customers was a big help for the potential customers, it is important and useful for both entities. The usual shopping, we used to be we could inspect the product thoroughly but with the online shopping the main deal is lack of inspecting of the product beforehand to make sure if the product we are going to buy is worth it. However, while online shopping brings convenience to consumers, due to the virtually of the e-commerce platforms, there are many problems in the products sold on the platforms, such as inconsistency between descriptive information and real goods, poor quality of goods, imperfect after-sales of goods and so on. Simply asking our friends to justify the quality of product that we are going to buy in online shop was not worked sometimes. Especially to the first-time buyers in digital market they worried what if wrong product delivered or the transactions went failed. The opinion of previous customers about the certain product was helpful in somehow. But sometimes people were not enough with their reviews/ratings or they are giving fake comments to the product and it makes bad reviews to product/s. Studying Sentiment Analysis is the most used approach to analyse data which is in the form of text and to identify sentiment content from the text. Opinion Mining is another name for sentiment analysis. Analysing E-Commerce data will help online retailers to understand customer expectations, provide better shopping experience and to increase the sales. Sentiment Analysis can be used to identify positive, negative, and neutral information from the customer reviews. Sentiment Analysis is used to analyse data which is stored in text format. Text data can be in form of customer reviews, complaints, feedback, discussions, tweets in social media etc. [2]. Trust on transaction and influence on online network affect someone's decision in buying a product (McCole et al., 2010).

Statement of the Problem

This study aimed to develop web-application entitled "E-Commerce Online Shopping Product Reviews Using Sentiment Analysis and Opinion Mining Automatic Classification". Specifically, it sought answers to the following questions:

1.   How can online product reviews be automatically and accurately classified with respect to their sentiments?

2.   How do the respondents assess the "E-Commerce Online Shopping Product Reviews Using Sentiment Analysis And Opinion Mining Automatic Classification" in terms of:

a) Completeness of the application
b) Correctness of the application
c) Appropriateness of the application
d) Capacity of the application
e) Recognisability of the application
f) Learnability of the application
g) User Error Protection of the application
h) Aesthetics of the application
i) Accessibility of the application
j) Availability of the application
k) Integrity of the application
l) Testability of the application
m) Adoptability of the application

Objectives of the Study

Using Sentiment Analysis, the product reviews can be more helpful and efficient especially to customers and for E-commerce businesses also. The objective of this study is to help both entities:

➢ To get the authentic product reviews/comments.
➢ Save time in manual processing of sentiments.
➢ To analyse the reviews/sentiment of the product and get the positive and negative results automatically.
➢ To prove test the accuracy of algorithm/s.

METHODOLOGY

Research Design

The proposal used the descriptive method in this research. Descriptive method explains the status of a variable using observational data collection. Often, the researcher begins without a hypothesis and lets the data steer the direction of the study. A descriptive research design can use a wide variety of research methods to investigate one or more variables. The researcher utilized both qualitative and quantitative methodologies in the research study.

Population and Sampling

The whole community from which you want to draw conclusions is referred to as a population. The method of selecting a group of individuals, activities, attitudes, or other elements in which to perform a study is known as sampling. There are two types of sampling the probability and non-probability, The probability sampling means that every member of the population has a chance of being selected in a non-probability sample, individuals are selected based on non-random criteria, and not every individual has a chance of being included.

A purposive sample also referred to as a judgmental or expert sample, is a type of non-probability sample which we applied in this study. The main objective of a purposive sample is to produce a sample that can be logically assumed to be representative of the population. This is often accomplished by applying expert knowledge of the population to select in a non-random manner a sample of elements that represents a cross-section of the population.

Respondent of the Study

The respondents of this study are the online shoppers. Once the system was deployed, researcher will conduct surveys with questions to verify the satisfaction from (92) online shoppers/users and (10) experts a total of one hundred two (102) respondents who participated for our system evaluation.

Table 1
Frequency of the respondents as to their Type

Type of respondents	Frequency	Percentage
Expert	10	9.8%
User	92	90.2%
Total	**102**	**100.0%**

Table 1 shows the profile of the respondents according to their type. The group of "Expert" got a frequency of 10(9.8%), and the group of "User" got a frequency of 92(90.2%) a total of 102(100.0%).

Table 2
Frequency of the respondents as to their Sex

Sex	Frequency	Percentage
Female	55	53.9%
Male	47	46.1%
Total	**102**	**100.0%**

The table above illustrates that the group of "Female" got a frequency of 55(53.9%), was greater than the group of "Male" who got a frequency of 47(46.1%) a total of 102(100%). Research indicates that women find shopping and buying more satisfying or pleasurable, and/or less dissatisfying or irritating than do men. They have more positive attitude towards browsing, social interaction, associating buying with leisure. Men at the same time tend to be negative towards shopping; they see buying as work and they want to accomplish this task with minimum of time and effort (Reid and Brown, 1996; Campbell, 1997; Dholakia, 1999).

Table 3
Frequency of the respondents as to their Age

Age	Frequency	Percentage
18 – 27	83	81.4%
28 – 37	16	15.7%
38 – 47	2	2.0%
48 – 57	1	1.0%
58 – 67	0	0%
68 and above	0	0%
Total	**102**	**100.0%**

Table 3 shows that the Age of 18-27 has a highest Frequency with a 83(81.4%), next is Age 28-3 got a 16(15.7%), Age 38- 47 got a 2(2.0%), Age 48-57 got a 1(1.0), lastly Age 58-67 & 68 and above has 0(0%). A total of 102 (100.0%).

Data Gathering Instruments and Techniques

Gathering of data is necessary in this project study. Through investigation and data collection, the need for developing the proposed system was determined. Data gathering is important for it provided ideas on how to effectively, accurately, and successfully implement the proposed system. The researcher used the qualitative data analysis in gathering data, text analysis is one of the most common methods for qualitative data analysis.

Text analysis is data analysis method where the researchers analysed the social life of the participants in the research study and decode the words, actions etc. This method suite in our study which relies on understanding the purchase behaviour of people.

Data Gathering Procedure

The researchers used web scrapping the technique to gather data automatically from an online source usually came from website. It is a best way to collect a large volume of data in relatively short time frame. Web scrapping can also help us to extract an enormous data about the customers/shopper products, people, stock market etc. One of the most common used especially in Python for a web is SeleniumWebDriver. The proponent gathered the data by using SeleniumWebDriver it is an open-sourced web-based automation tool. It is a web framework that permits you to execute cross-browser tests this tool is used to automating web-based application testing to verify that it performs likely.

It allows you to choose a programming language to create test scripts. The researchers came up with web scrapping to meet the objectives of saving time in manual processing of sentiments.

Statistical Treatment of Data

The following statistical tools were used in the interpretation of the results according to sub-problems. The following statistical tools were used in the study:

1. **Frequency**. It is the actual response to a specific item/question in the questionnaire where the respondent ticks his choice.

2. **Likert's Scale**. Was used to evaluate the result and the equivalent is given.

3. **Ranking**. This was used to reinforce the percentage to show the proportional importance of an idea considered.

4. **Percentage.** This was used as descriptive statistics or something that describe a part of the whole.

The formula is:

$$\%f = \frac{f}{n} \times 100$$

Where:

$\%f$ — Relative frequency

f — Frequency

n — Number of observation or sample size

Table 4
Likert's Scale

Scale	Range	Descriptive Interpretation
5	4.50 – 5.0	Strongly Agree
4	3.50-4.49	Agree
3	2.50-3.49	Moderately Agree
2	1.50-2.49	Disagree
1	0.5-1.49	Strongly Disagree

5. **Weighted mean.** It was used to denote the average response or perception of the respondents on the qualitative response. This is used to determine the status. The weighted mean was used as follows:

Formula:

$$\overline{wx} = \frac{\sum wx}{\sum w}$$

where:

$\overline{wx}$ — weighted mean

x — any particular value

n — number of observation or sample size

Σ — summation symbol means to "sum up"

6. **Independent Sample T-test.** The Independent Samples t-test is a statistical test used to determine if 2 groups are significantly different from each other on your variable of interest. We are interested in investigating the difference of the assessment of user and Expert in every features of the system. The formula is:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\dfrac{s_1^2}{n_1} + \dfrac{s_2^2}{n_2}}}$$

where:

t	=	t value
$\bar{x}_1$	=	mean of the 1st group
$\bar{x}_2$	=	mean of the 2nd group
s_1^2	=	variance of the 1st group
s_2^2	=	variance of the 2nd group squared
n_1	=	sample size (1st group)
n_2	=	sample size (2nd group)

Project Development Model

The researcher adopted the Agile Method in creating the proposed title. Agile Method is the type of model in Software Development Life Cycle where in systems engineering, information systems and software engineering, the systems development life cycle, also referred to as the application development life cycle, is a process for planning, creating, testing, and deploying an information system. Agile Method is a practice that promotes continuous iteration of development and testing throughout the software development life cycle of the project. In this model both development and testing activities are concurrent.

Figure 2. *Agile Method*

In creating system, the researcher applies the phases accordingly. First phase would be requirements, proponents gathered information from Carousell, a Singaporean smartphone and web-based consumer to consumer and business to consumer marketplace for buying and selling new and second-hand goods. Next is designing phase proponent used CSS in designing the system. CSS (Cascading Style Sheets) is a style sheet language used for describing the presentation of a document written in a mark-up language. It is a cornerstone technology of World Wide Web, alongside HTML and JavaScript. In development researchers start in creating tools that will be using in gathering data. Scooping of data in web, researcher came up with Python, which is the best idea for web scraping.

SeleniumWebDriver is one of the frameworks based on Python that makes scraping using this language such an easy route to take. It is a Python library that is designed for fast and highly efficient web scraper.

Once all the development phases were completed the proposed system use as a basis to evaluate how it was developed. The researchers utilize the International Standardization Organization (ISO/IEC) 25010:2011 such as functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability. The researchers gathered all the reviews from the survey result after developing the system.

RESULTS AND DISCUSSION

This chapter presents and interprets the data gathered. The data was gathered completely to answer the statement of the analysis and in problem using the appropriate statistical tools.

Table 5
Comparison of level of assessment between two groups of respondents as to the features of "E-commerce Online Shopping Product Reviews Using Sentiment Analysis and Opinion Mining Automatic Classification"

	Features	USER		EXPERT		Grand Mean	Verbal Interpretation	Rank
		WM	VI	WM	VI			
1	Completeness	4.18	A	3.90	A	4.16	A	7
2	Correctness	4.20	A	3.90	A	4.17	A	6
3	Appropriateness	4.14	A	4.30	A	4.16	A	7
4	Capacity	4.09	A	3.50	A	4.03	A	13
5	Recognizability	4.20	A	3.70	A	4.15	A	9
6	Learnability	4.23	A	4.10	A	4.22	A	4
7	Protection	4.09	A	3.80	A	4.06	A	11
8	Aesthetics	4.05	A	4.10	A	4.06	A	11
9	Accessibility	4.39	A	3.80	A	4.33	A	1
10	Availability	4.25	A	3.60	A	4.19	A	5
11	Integrity	4.10	A	4.10	A	4.10	A	10
12	Testability	4.27	A	3.80	A	4.23	A	3
13	Adaptability	4.29	A	3.90	A	4.25	A	2

The data in Table 5. Reveal that "Accessibility" ranked first with associated weighted mean of 4.33 and a verbal interpretation of "Agree". Then, "Adaptability, Testability, Learnability, Availability, and Correctness" ranked second up to sixth respectively with associated weighted mean of 4.25, 4.23, 4.22, 4.19 and 4.17 respectively and a verbal interpretation of "Agree". While "Correctness and Appropriateness" both ranked seventh with associated weighted mean of 4.16 and a verbal interpretation of "Agree". Followed by "Recognizability and Integrity" ranked ninth and tenth respectively with associated weighted mean of 4.15 and 4.10 respectively and a verbal interpretation of "Agree". And "Protection and Aesthetics" both ranked eleventh with associated weighted mean of 4.06 and a verbal interpretation of "Agree". Lastly, the "Capacity" got the lowest rank with associated weighted mean of 4.03 and a verbal interpretation of "Agree".

Relating to these evaluation, Accessibility got a highest ranked of all indicators. SVM is a powerful method in analysing sentiments it was effective even if it used alone.

Table 6 summarize the $T-$ test that was used to compute the statistical significance that can be noted in the levels of assessment of two groups of respondents. It turns out that the $p-$ values of the following features; Appropriateness, Learnability, Protection, Aesthetics, Integrity, Testability and Adaptability are greater than.05. This implies that there is not enough evidence to say that there is a significant difference among the assessments of the three groups. If we take the EXPERT as the standard of evaluation on each listed feature, it can be concluded that the standard was met.

Table 6
Independent T-test

Features	*T*-value	df	p-value	Decision	Interpretation
Completeness	2.272	21.535	.033	Reject Ho	Significant
Correctness	2.318	22.928	.030	Reject Ho	Significant
Appropriateness	-.599	100	.550	Fail to reject Ho	No Significance
Capacity	2.110	100	.037	Reject Ho	Significant
Recognizability	2.053	100	.043	Reject Ho	Significant
Learnability	1.038	20.450	.312	Fail to reject Ho	Significant
Protection	1.009	100	.315	Fail to reject Ho	No Significance
Aesthetics	-.172	100	.864	Fail to reject Ho	No Significance
Accessibility	2.474	100	.015	Reject Ho	Significant
Availability	2.447	100	.016	Reject Ho	Significant
Integrity	-.008	100	.994	Fail to reject Ho	No Significance
Testability	1.832	100	.070	Fail to reject Ho	No Significance
Adaptability	2.023	100	.065	Fail to reject Ho	No Significance

Note that $n = 102, \alpha = .05$

CONCLUSION

According to the respondents the study met the standard they most agreed to the specification included in the survey. The project was accessible to use according to the result of the study. The most crucial part was gathering sentiments with respect to customers' review specially the sarcasm words still not able to recognize in neutral. The proponents discovered that the fewer data or sentiments got a high inaccuracy of result. Also using BeautifulSoup wasn't a good idea in this study researcher having difficult times in using it. It was easy to use at first but later on researcher discovered it was not able to use in swiping data. Then we come up in using Selenium in scraping data.

RECOMMENDATION

The researcher recommend for further improvement and innovations. Suggesting the use of SeleneiumWebdriver in collecting sentiments it's an open source API's and supports many browser that makes researchers ease in collecting data. To the future researcher must need more data to get a higher accuracy, in terms in designs be creative recommending to enhance the detailed of dash board.

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DATABASE SECURITY USING TFSF OPERATIONS IN SYMMETRIC ALGORITHM

Melody L. Gabas

INTRODUCTION

Information security has reliably been a noteworthy issue in web applications. Database security has vital significance in organization, military, personnel and government areas. Associations are putting away huge measure of information in database for information mining and different sorts of investigation. Some of this information is viewed as delicate and must be shielded from exposure. Challenges for security in database are expanded because of the colossal prevalence of e-business. As of late, insider assaults assembled more consideration than occasional episodes of malware. Database frameworks are normally conveyed somewhere inside the organization system and subsequently insiders has the most effortless chance to assault and trade off them, and after that take the information. So information must be shielded from inside aggressors too. Numerous traditional database security frameworks are proposed for giving security to database, yet at the same time the delicate information in database are helpless against assault on the grounds that the information is put away as plaintext only. [1]

In the presence of security threats, database security is becoming one of the most urgent challenges because much damage to data can happen if it suffers from attacks and unauthorized access. With databases in complex, multi-tiered applications, attackers may reach the information inside the entire organization [2]. We can categorize the attackers into three types: intruder, insider, and administrator. Intruders are external people who infiltrate a database server to steal or tamper with data. Insiders are authorized users in a database system, who conducts some malicious works. Administrators can be database administrators (DBA) or system administrators (SA), and both have absolute rights to database systems. However, if they are malicious, the security of the database may be damaged [3]. Insider and administrator attackers have gathered more attention in recent years because they can access a database without any effort, and they use important data in a wrong way. Database encryption has the potential to secure data at rest by providing data encryption, especially for sensitive data, avoiding the risks such as misuse of the data [2]. In order to achieve a high level of security, the complexity of encryption algorithms should be increased with minimal damage to database efficiency, ensuring performance is not affected.

There are many research studies in the database security field. Some of them have efficient implementations. Also, many encryption algorithms have been proposed, some of which have appealing features but still need further development, one such algorithm is the Transposition, Substitution, Folding and Shifting TSFS algorithm, known as the TSFS algorithm [2]. The TSFS algorithm provides a high degree of security, using a number of features. However, it supports only numbers and alphabetic characters that are not enough to protect different types of sensitive data. Another deficit of the TSFS algorithm is during the substitution and shifting processes where some errors occur during the decryption process.

Related Work

Due to the important role that encryption techniques play in securing database systems, numerous algorithms have emerged with different techniques and performance. Bouganim and Pucheral proposed a smart card solution to protect data privacy; the owners of databases can access the data using a client terminal that is supported by smart card devices [4]. This proposed solution is considered as a secure and an effective solution, but it is complicated and expensive [2]. Database encryption greatly affects database performance because each time a query runs, a large amount of data must be decrypted. Therefore, [5] suggests that encrypting sensitive data only can provide the needed security without affecting the performance.

The database security mechanisms, algorithms like TSFS, DES, and AES came into focus, which are different from other and had a few advantages and disadvantages based on their optimization ways.[6] The DES algorithm is one of the well-known symmetric key algorithms considered as insecure for many applications and presents AES as a replacement. D. Manivannan, R. Sttjarani [2] proposed well-organized encryption technique using the symmetric - key. Popularly known as TSFS algorithm, which includes transpositions and substitutions as features in the techniques that limits encryption and decryption operation times. Later an enhanced TSFS is proposed which is an extended work on TSFS which can encrypt the data that contains alphanumeric and few special characters ensuring high level of security to encrypted data but imposes few constraints on the data size and the special characters used [2].

In [2] [7] [8] encryption algorithms were proposed depending on encryption of sensitive data only. Kaur et al. proposed a technique to encrypt numeric data only using a fixed data field type and length [7]. However, this algorithm does not support encryption of character data. Agrawal et al [8] also, proposed an encryption scheme for numeric data with an important feature that allows queries or any comparison operations to be applied directly on encrypted data sets without decrypting them. The scheme uses indexes of database over encrypted tables, but it is only applied to numeric data, additionally, it has not investigated key management. In some application, where the data is backed up frequently, we need to control the access to data and support multilevel access. So, Hwang and Yangb proposed a multilevel database encryption system with subkeys, which can encrypt/decrypt the whole table, column or row. Also, this system can encrypt each row with different subkeys according to a security class of the data element. This system is based on the Chinese Remainder Theorem [9].

The DES algorithm is one of the famous encryption algorithms that use a symmetric-key to change 64-bit of a plain text into 64-bit of a cipher text, using 56-bit of the key and 16 rounds. [10]. It is, now, considered as insecure for many applications; this is mainly due to the size of key, which is too small [11]. The work in [12] presents the AES algorithm as a replacement for the DES algorithm as a standard for data encryption. It is a symmetric-key algorithm that takes 128-bit for the plain text and 128, 192, or 256-bit for the key, the length of the key specifies the number of rounds in the algorithm.

Finally, Manivannan and Sujarani [2] proposed efficient database encryption techniques using the TSFS algorithm, which is a symmetric-key algorithm. Its main features include using transposition and substitution ciphers techniques that are important in modern symmetric algorithms as they have diffusion and confusion.

However, TSFS algorithm applies only to alphanumeric characters; it does not accept special characters or symbols. More details about the TSFS algorithm is provided in [13], which builds a system that generates different numbers of secret keys based on the TSFS algorithm along with other algorithms to ensure a high security level of encrypted data.

Motivation

All through organizations, Government division, specialist's and workplaces database frameworks are utilized. This specific framework stores and recovers touchy data, for example, government disability numbers, budgetary articulation, and profoundly grouped information. Associations with delicate information in their grasp should be secured utilizing diverse security strategies and arrangements. Keeping in mind the end goal to secure the information on a PC, they have to actualize strategies like get to control, evaluating, verification, encryption and so forth. However pernicious clients are as yet breaking into organizations information. Obviously, organizations are not executing poor security methods but rather programmers are simply getting more intelligent and quicker witted. This is the place IT workers need to discover new procedures or upgrade past ones. Hence, we actualize the TFSF operations for touchy database security.

Architecture

The Primary Purpose of Encryption is to ensure the certainly of advanced information put away on PC frameworks or transmitted through the Internet or other PC systems. Present day encryption calculations assume a fundamental part in the security confirmation of IT framework and correspondences as they can give classification, as well as the accompanying key components of security. Information frequently alluded to as plaintext is encoded utilizing an encryption calculation and an encryption key. This is procedure creates figure message that must be seen in the first frame if unscrambled with the right key. Unscrambling is essentially the backwards of encryption, taking after similar strides however turning around the request in which the keys are connected.[14]

In general the encryption process for securing data that other user cannot access or read that information may be images, audio or plain text data by selecting the images, audio, or text file that contents are converted into the binary character or ASCII code.

Figure 1. *General Procedure of Cryptography*

Proposed system has two main phases.

A.   Encryption Method

B. Decryption Method
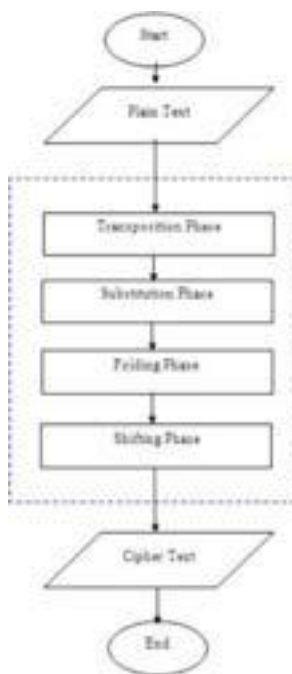
Figure 2. *Encryption Method*
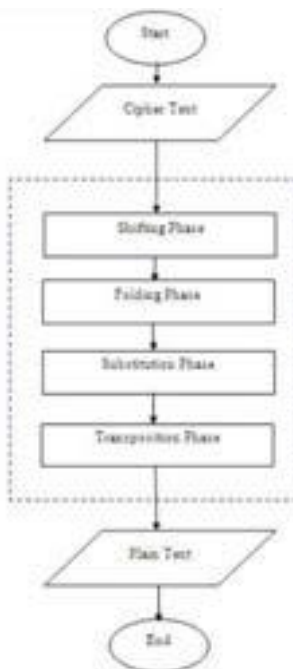
Figure 3. *Decryption Method*

The TSFS algorithm includes the following alphanumeric characters and a few of special symbols (*, -, /, :, @ and _) only used to encrypt the data that is taken as input. But in

the proposed methodology it included almost all the special characters. It is a symmetric encryption algorithm which can be inversed that cancels the encryption.

The constrained restricted on the number of characters is successfully imposed by accepting different data sizes dynamically depending on the user input length and if the length of data is less than the near square matrix size then the characters are replaced by *'s. Let say, the input string is 14 in length, then the nearby square matrix is 4x4 and the one character that is left is replaced by *'s. The four techniques of TSFS are described as:

Transposition Phase:

For a given input data matrix, the diagonal transposition is carried out starting from top leftmost corner till the end of the matrix by moving laterally in one step followed by diagonal transition continually.

For example. Consider a string **"Infotech@17.com"** to be encrypted.

Input

I	n	f	o
t	e	c	h
@	1	7	.
c	o	m	*

Output

I	n	t	@
e	f	o	c
1	c	o	7
h	.	m	*

Figure 4. *Transposition Phase*

As shown in the example figure, the output data is obtained by retaining the first element in the matrix.

The transposition in the given input is performed such that zigzag pattern (Int@efoc1co7h ....*) is followed by starting at the initial index of the matrix which is in the data matrix and continued by following a pattern till the end of matrix. The output data matrix will be the insertion of elements followed as it is in zigzag pattern. This is given as input to the substitution phase.

Substitution Phase:

The second algorithm is substitution transformation. It replaces one data matrix element with another by applying certain function. If the element represents an alphabetic character, it then will be replaced with another character. If the element represents a number, it will be replaced with a number and if it represents a symbol, it will be replaced with a symbol.

Folding Phase:

The third algorithm is folding transformation. It shuffles one of the data matrix elements with another in the same entered data, like a paper fold. The data matrix is folded horizontally, vertically and diagonally. The horizontal folding is done by exchanging the first row with the last row. The vertical one is done by exchanging the first column with the last column. The diagonal fold is done by exchanging the inner cells, the upper-left cell with the down-right cell and the upper-right cell with the down-left cell.

Shifting Phase:

The last part of the algorithm is the shifting transformation, which provides a simple way to encrypt. We will use these four steps with our purposed algorithm to encrypt data. TSFS use 1 array while we will increase array size to achieve encryption which will also support special characters.

The main objective is to enhance the TSFS algorithm and accordingly to provide a high security to the databases whilst limiting the added time cost for encryption and decryption by encrypting sensitive data only. The TSFS algorithm can encrypt the data that consists of alphabetic characters from A to Z, all numbers and the following symbols: (*, -. /: @ and _). The Enhanced TSFS algorithm is a symmetric encryption algorithm, meaning each transformation or process must be invertible and have inverse operation that can cancel its effect.

CONCLUSION

The database of organization is the key part for keep the data available to the client as well as their organization. The plain text can be easily understandable by the intruder so the information needs to be encrypted or convert into another form. Data-storing and exchanging between computers is growing fast across the world. The security of this data has become an important issue for the world. The best solution centered on securing the data is using cryptography, along with other methods. We have been proposed the enhancement of the TSFS algorithm to support the encryption of special characters, correct substitution process by providing more than one modulo factor to differentiate between data types and prevent increasing the data size, as well as correcting the shifting process.

The improved performance comes without compromising query processing time or database size. Using well established encryption algorithms as benchmarks, such as DES and AES, the proposed TSFS algorithm was shown to have consumed the smallest space and encryption time compared to the other algorithms. Our proposed enhanced TSFS algorithm can be improved in terms of security and speed. Encryption of special characters can be done in different methods. The Enhanced TSFS algorithm methodology is explained in which security is ensured in databases by simultaneously increasing the performance of encryption and decryption process.

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FEASIBILITY OF CORN HUSK *(ZEA MAYS)* AND PEANUT SHELLS *(ARACHIS HYPOGAEA)* IN THE PRODUCTION OF BIOETHANOL

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INTRODUCTION

As of the present time, one of the most important issues the world is currently facing were the determination of the capability of having a dependable and affordable renewable energy sources and the sustainable development of other natural resources. Many researchers around the world had been conducting experiments to develop and optimize the energy that must be sustainable. The consumption of energy had increased very fast as more countries became industrialized. One of the examples of problem on how the wastes can be utilized is the usage of both corn husk and peanut shells in order to produce bioethanol. It has been found out to be feasible that bioethanol is totally biodegradable and sulfur free where the incomplete oxidation products such as the acetic acid and acetylene were less toxic from other various type of alcohols respectively.

This research aims to determine the feasibility the of the usage of the combination of agricultural wastes such as corn husks and peanut shells were feasible as major raw materials for the production of bioethanol. It aims to specifically answer the questions such as the following examples: if the agricultural wastes such as the corn husk and peanut shell can increase efficiency and environment friendly in the production of bioethanol.

The conceptual framework of the study interprets and shows the relationship on how the following parameters mentioned: input, process and output and how they are interrelated to each other which have a main goal of achieving the major objective of the study. It is represented by the figure below:
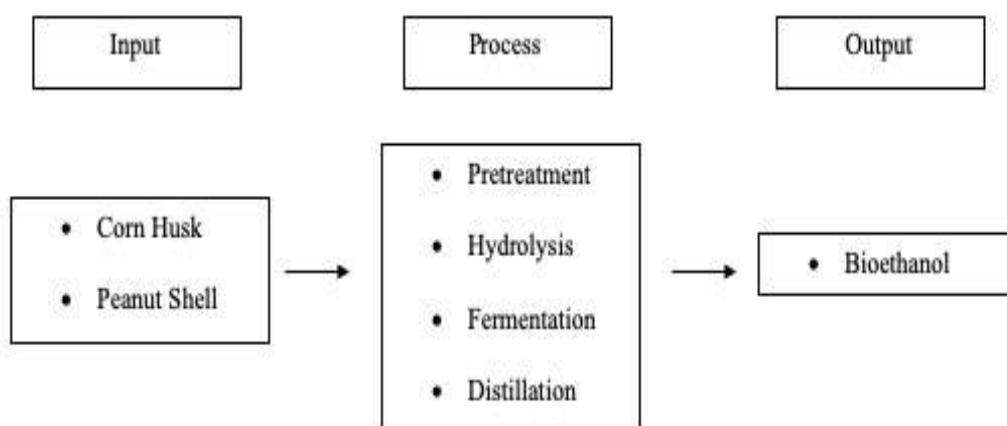
Figure 1. *Conceptual Framework of the Study*
(Process of Corn Husk and Peanut Shell Used as Major Raw Materials
for the Production of Bioethanol)

The general objective of the study is to determine the feasibility of the usage of the combination of both corn husks and peanut shells as major raw materials for the production of bioethanol. It aims also specifically to develop a bioethanol made from the combination of two major raw materials mentioned and also to develop a bioethanol made from alternative materials made from agricultural wastes.

The research can be very beneficial to the following: to the community, it can be used as an alternative and affordable source of energy in order to be more environmentally friendly product. To the scientific community, it serves as an insight on the potential of agricultural wastes that can be used as alternative raw materials for the production of bioethanol. To the students, it also contributes to the future works that can be studied in relation to the renewable energy. To the future researchers, this will serve as guide or reference which can be used for future studies and the revisions must be taking into account in detail.

MATERIALS AND METHODS

This section of the study illustrates the appropriate type of research methodology being used in the conduct of the study. With reference or respect to the analysis of the review of related literature and studies, it shows up that a very clear and detailed discussion about the potential of the using the agricultural wastes such as the corn husk and peanut shell can be used in this study respectively.

The approach being used in the research is also known as the experimental method of research. This research method or strategy explains that there must be an appropriate experiment to be done or conducted in order to achieve the main and specific objectives and also the answers to the statement of the problem of the study. This type of approach is very technical and highly scientific in terms of nature of the study.

The following are the important steps which are used in order to conduct this study: first, corn husks and peanut shells which are both agricultural wastes were obtained from a public market in Manila. Second, there will be a pre – treatment of the major raw materials where there is a separation of biomass then they are washed with distilled water to remove impurity. Third, the major raw materials which are corn husk and peanut shells were milled, grinded and chipped up to 3 mm particle size then they are dried for 3 – 5 days under the sun then it is pre – treated with alkaline solution in preparation for the hydrolysis process. Fourth, the process of hydrolysis follows where the sample was hydrolyzed at a higher temperature of 121 °C for 15 minutes and filter paper where the filtration process will occur in order to separate the solid particles from the liquid and it must be maintained at a temperature of 30 °C in order for the samples to cool. Fifth, the process of fermentation occurs with the usage of yeast (S. cereviciae) in order to convert the sugars into bioethanol then the determination of the bioethanol concentration was analyzed using gas chromatography at fermentation for over a time of 12 hours or half of one day.

It is shown in the table below in detail the materials being used to conduct the study.

The type of analysis used to determine the concentration of bioethanol is the gas chromatography after the fermentation process occurred.

Table 1
Summary of Materials Used for the Conduct of Study

Name of Material	Description
1. Bottles	These are the materials where the samples must be placed.
2. Corn Husks and Peanut Shells	This are the two major raw materials used in the conduct of this study.
3. Crusher	This is where the major raw materials can be reduced into smaller particles before the chemical process occurs that produces bioethanol.
4. Filter Paper	This is used to filter the samples.
5. Sodium Hydroxide (NaOH) Solution	This is used for alkaline pre – treatment of materials.
6. Weighing Scale	This is used to determine the mass of the samples obtained during experiment being conducted.
7. Yeast (S. cereviciae)	This is used for the fermentation process in order to produce the bioethanol.

RESULTS AND DISCUSSION

The following are the results of the experiment for the research after the research has been conducted:

Table 2
The Amount of Product After Pre – Treatment, Hydrolysis and Fermentation

Mass of Raw Materials (grams)	Mass of Solid Product After Pre – Treatment (15 Minutes) (grams)	Volume of Product After Hydrolysis (15 Minutes) (ml)	Volume of Product in Fermentation After Adding 3 Grams of Yeast (72 Hours) (ml)
50 grams	132 grams	120 ml	140 ml
20 grams	52 grams	48 ml	56 ml
10 grams	26 grams	24 ml	28 ml

The table above show the amount of product produced after the process of of pre – treatment, hydrolysis and fermentation in order to produce bioethanol.

Figure 2. *Fermentation Process for the Production of Bioethanol*

The figure above shows the fermentation process on how the bioethanol was produced.

Figure 3. *Corn Husk and Peanut Shell Bioethanol*

The figure above is the finished product which is the bioethanol produced from the combination of corn husks and peanut shells.

CONCLUSIONS

The following are the conclusions and recommendations that can be obtained from this study which have possibilities to be further enhanced or further improved are the following: the bioethanol produced from corn husks and peanut shells were feasible and environment friendly. It also produces a bioethanol of $50 \frac{g}{ml}$ at the following conditions: 15 minutes of hydrolysis, fermentation for over 12 hours, proper process of hydrolysis and proper concentration in order to achieve the desirable product.

The following are the recommendations can be obtained or inferred from this study: these major raw materials were feasible in producing a bioethanol. There must be an alternative source of energy in order to be environment friendly. The future researchers must find more effective methods of producing bioethanol respectively.

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QUICK RESPONSE CODE (QRCODE) BASED BARANGAY VOTING SYSTEM

Jasmin Macasil
Sherwin Keith Rivera

INTRODUCTION

Electronic Voting Machine is a machine that now used to votes of many countries. It is an automatic machine that automatically counts the ballots and read the shades inserted by the voters.

[1] Being a standalone machine without any network connectivity, nobody can interfere with its programming and manipulate the result.

Now a day's more improvements and growth in technology are evolving. Many developers are trying to develop a new process of voting such as the existing system using a biometric concept that scanning the finger prints of voters to identify their identities and record their votes, but most of the biometric based voting system does not have an encryption and decryption method. This kind of system is still useful but many people are still doubted it and due to continues growth of technologies, some countries are now developing and now using Internet to vote, they used an Internet Election System for easy access and voting process that directly send to the database online without going to the precinct. It is a good solution for those residents that working outside the country. Now there is another way to get information or even to add friends using a code like barcode and this are the QRCode. [2] Quick Response Code or also known as QRCode is a type of 2D bar code that is used to provide easy access to information through a smartphone and now displayed in advertising materials. Nowadays, QRCode are used by some malls as a type of another mode of payment like GCash.

Elections and campaigns will always be tumultuous, especially in politics and government, but the voting mechanism doesn't have to be [3]. Technology upgrades in election are really hard to process due to complication that might be encounter especially the confidentiality of the data(votes). That's why the researchers want to use the QRCode to view the voter's information and casting of votes automatically by scanning their permanent personal unique QRCode given by the barangay personnel's only.

METHODOLOGY

This chapter presents the System Development Life Cycle method used in the study.

Spiral Model

The spiral model was used to achieve the purpose of the study. The spiral model and evolution represent a risk driven approach to software process analysis and structuring. This approach incorporates elements of specification driven, prototype-driven process methods, together with the classic software life cycle. It does so by representing iterative development cycles as an expanding spiral, with inner cycles denoting the classic software life cycle.
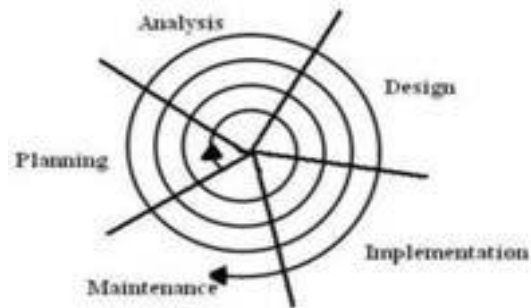
This process helps the proponents to construct and test their analyzing ability for their proposed system and used their imagination in designing to the said system. It helps the proponents to have a better communication with the users of the system and to have a good plan for the proposed system. It is also helping the proponents to meet the users need.

RESULTS AND DISCUSSIONS

Based on the table seen on Figure 1.0, the timeline is in a weekly basis. Thus, it has been categorized based on three different of development. Which is Coding, Testing and Deployment. On the first week upon the completion of the project, testing phase was implemented and the developers found some errors. And with that, a 60% completion rate was given and the deployment has been halted. Upon reaching the third week, the developers finally meet the needs of the software. Thus, the deployment process has taken place.

In Figure 1.1, after seeing some bugs on the system during the deployment and stress tests on week three, the developers then refurbished the system and implemented an updated version that meets with the objectives.

Timeline	Coding	Testing	Deployment
Week 1	100%	60%	0%
Week 2	100%	85%	0%
Week 3	100%	100%	90%

Figure 1.0
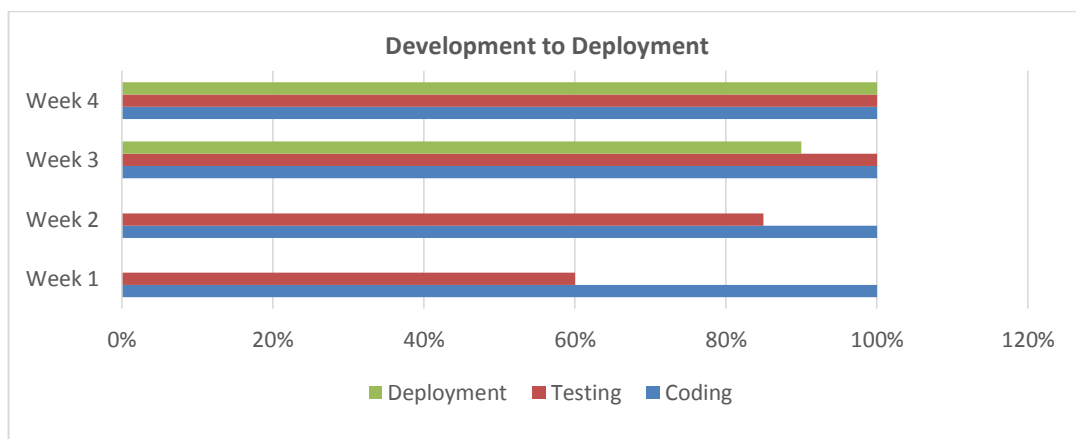
Figure 1.1

CONCLUSION

The primary goal of this system is to augment the process of Barangay Election in Web- Based and Mobile Application Integration with QR code reader and scanner. Therefore, we proposed a new efficient verification and validation of casting votes and tallying it. The security of each QR code assigned to specific candidates and voter who were registered in a barangay. We mainly concentrate on the usability and accessibility to consider human factors for a QR code scanner approach of using it.

The proposed barangay election scheme raises also some research question. For example, if the system would be used in all barangays in the Philippines, will there be a possibility to process the casting of votes as well as tallying? With this in mind, other principles such as fingerprint based, linear barcodes and non-repudiation and confidentiality also can be considered.

Moreover, QR code is more advantageous than other ideologies, which could be introduced to protect the verification and validity of votes being casted. Using QR code scanner provides the content of the Web Service, the Voter Identification and number and lastly, when it was created. Finally, though we have used the Webcam and QR code threshold, there is also a possibility to use more other scheme of voting verification and validation itself in an appropriate of sequence scenario.

RECOMMENDATION

System Maintenance Plan

The maintenance phase involves that the proponents will use the corrective maintenance which refers to the changes made to repair flaws in its design, coding or implementation of the system. It also focuses on removing defects from system without adding new functionalities.

Once the proposed system is implemented on the barangay, the proponents suggest to have a technical support staff that will act as the user support for the system were further assistance can be forwarded to them and aware in handling the possible error on the system.

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ON WOODALL NUMBER: PROPERTIES AND RELATIONSHIPS

Rodora T. Oliveros

INTRODUCTION

People tend to dedicate more work and time in studying Mathematics. So most people ended up asking the most usual and common question about, "Why do people need to exert effort in studying math?" Mathematics is a tough subject and it is also hard to understand and love to majority of people mostly students. Students may find it boring and such a waste of time because they tend to think that they can't use it in their daily lives. But what most people don't know is that mathematics is all around us. We can see it at home, in school, at work, and in businesses. We see mathematics around us because, we see number all around us and number speaks.

Number sequences have been attracting students of mathematics since the time of ancient Greeks. Students find special interest in patterns expressed both geometrically and mathematically. These patterns are usually found in Number Theory. Number Theory is one of the oldest branches of pure mathematics, and one of the largest too. It is fun because it concerns questions about numbers, particularly the positive or natural numbers.

Sequences and patterns arise naturally in many real life situations. Looking for patterns in sequences of numbers can be something one can do because it's fun or it can be something one does to get better at finding patterns in other contexts.

Woodall Numbers was first studied by Allan J. C. Cunninghum and H. J. Woodall in 1917, inspired by James Cullen's earlier study of the similarly-defined Cullen Number.

The main idea of this study is to show how Woodall Number are generated, to discuss its properties and theorem, and how Woodall Number is related to Cullen Number, A_n and B_n.

This topic seemed to be interesting because it gave the researchers enthusiasm to find out more about Woodall Numbers and contribute ideas to the present society with regards to Woodall Number. Also, this can be used as a future reference to students who may find interest in Woodall Number.

MATERIALS AND METHOD

The method that is used in this research is descriptive research but expository in nature.

Descriptive method of research is to describe the characteristics of the phenomenon being studied. It does not answer questions about how/when/why the characteristics occurred; rather it addresses the "what" questions. This is the best method to use since this study aim to describe the subject of the study. This research is also expository in nature because it described, explained, and informed. Every definition has a corresponding example and each theorem was accompanied by illustrations. Moreover the study was not a survey type of research; hence, no respondents, no statistical treatment of data and no table of result were presented.

RESULTS AND DISCUSSION

1.　　Woodall Number which is denoted by W_n is given by the formula $W_n = n \cdot 2^n - 1$ for n is a positive integer.

2.　　Woodall Number can be generates as follows:

2.1　　For any positive number $n > 2$, Woodall Number can generates by the equation $W_n = 4W_{n-1} - 4W_{n-2} - 1$.

2.2　　For any positive number, Woodall Number can be define by $W_{2n} = 2^n(2W_n + 2) - 1$.

2.3　　For any positive number, Woodall Number can be define by $W_{2n} = 2^n(W_n + C_n) - 1$. where C_n are Cullen Numbers.

3.　　Woodall Number is related to the following number sequence:

3.1　　Cullen Number $C_n = n \cdot 2^n + 1$ is related to Woodall Number because subtracting 2 gives Woodall Number sequence.

3.2　　For any natural number n, $W_n = n \cdot 2^n - 1$ is equal to $W_n = A_{n+1} - 1 - B_n$.

CONCLUSIONS

1.　　The Generating Function of Woodall Number is given as $W_n = x + 7x^2 + 23x^3 + 63x^4 + 159x^5 + 383x^6 + 895x^7 + 2047x^8 + \cdots$

2.　　The nth partial sum of Woodall Number can be solve by the equation,

$$\sum_{i=1}^{n} W_i = 4W_{n-1} - n + 6.$$

3.　　The recursive formula of Woodall Number, $W_n = 4W_{n-1} - 4W_{n-2} - 1$.

The Non-Recursive Formula of Woodall Number is $W_n = n \cdot 2^n - 1$.

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COMPUTER PROFICIENCY OF TECHNOLOGY AND LIVELIHOOD EDUCATION TEACHERS IN THE DIVISION OF SCHOOLS, TRECE MARTIRES CAVITE PROVINCE

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INTRODUCTION

The world's post–normal conditions at the present time affect the education systems adapted in the Philippines prior to the covid 19 pandemic period. The abrupt advent of such health crisis had posed very challenging demands for the school administrators and the teachers as the front liners in the implementation of immediate programs of the Department of Education to address the current issues besetting learning and teaching platforms amidst health protocols. The recurring theme over the years such as relevance and quality of graduates is imperative to nation-building and society. To restate one of the national educational aims, the educational system must respond effectively to the changing needs and conditions of the nation through a system of educational planning, articulation and evaluations.

Most recent studies on faculty development stressed the importance of enhancing professional growth among the teaching faculty in the light of ever changing faculty needs, teaching strategies, and survival needs facing today's educational institutions, and that its programs must be redesigned to meet these needs. Hand in hand with these facts and information, there has long been perceived as a crucial need for designing strategies to evaluate faculty development program.

It was mentioned that a teacher in the 21st century must possess a high level of emotional and mental intelligence and moral integrity. He should be open to change and globally competitive. As a professional, he is multi-skilled, being very competent in the fields of pedagogy, multimedia instructional technology, science and information technology, and having excellent communication and interpersonal skills. He has also high level of dedication, self-motivation and commitment to his profession. He loves teaching and his students. He himself is a lifelong learner who continually undergoes upgrading of his knowledge and skills.

The international materials that can transmit the essential knowledge and skills through a medium or a combination of media for conveying information to the pupils in terms of print and non-print or electronic medium that would contribute to the learning process, is potentially one of the most variables/interventions toward, teaching the subject.

With this problem brought about by the scarcity of instructional and supplementary materials to support teaching and learning effectiveness, the researcher/responded with exigency the computer-aided materials to develop computer aided approach which can motivate and encourage students to learn and to acquire the knowledge and skills in reading comprehension in the subject. This could serve as the foundation for lifelong learning. Likewise, the researcher also wanted to determine the validity and effectiveness of the computer-based instructional materials to enhance the performance of the pupils after using it and assessed to its acceptability from the teachers, school heads and ICT experts.

Objectives of the Study

This study aimed at determining the proficiency of TLE teachers in computer technology as a major way of preparing instructional materials, communicating with pupils and students and other computer related tasks in dispensing their teaching effectiveness in curricular and co-curricular activities.

Statement of the Problem

This research attempted to determine the computer proficiency of Technology and Livelihood Education teachers in the Division of Trece Martires Cavite. More specifically, it sought to find answers to the following questions:

1.   What is the level of computer proficiency of teachers in technology and livelihood education as assessed by teachers, ICT experts and school heads in terms of:

        1.1   Basic Computer Operations;
        1.2   Basic Computer Maintenance;
        1.3   Word Processor; and
        1.4   Presentation Software?

2.   Is there a significant difference among the assessment of the respondents on the above mentioned variables?

3.   What are the problems encountered by the respondents as to computer proficiency of teachers in TLE?

Hypotheses

There is no significant difference in the assessment of the Respondents on the computer proficiency of teachers in Technology and Livelihood Education such as Basic Computer Operations, Basic Computer Maintenance, Word Processor, and Presentation Software.

Significance of the Study

The result of this study can contribute and be beneficial to:

Pupils/Students. The significant findings of the study will provide and help the pupils to develop and enhance their reading comprehension.

Teachers. The result of this study will provide basic information in their work plan. It will also serves as a guide for the teachers to prepare their lessons interesting, to the learners and make their discussion lively and interactive inside their classroom.

Experts. The school administrators will gain insights into the possibility of adopting new style of leadership and monitoring and evaluation as part of their administrative system.

Research Methods

The study uses descriptive survey method and purposive sampling in this study.

Data Gathering Procedure

The following procedures were undertaken by the researchers:

1.   Administer and distribute the research instrument to the respondents

2.   Collect personally the research instrument.

3.   Tabulate and compute with the assistance of the statistician and thesis adviser.

Sampling

The researchers used the Purposive Sampling Technique in choosing the samples. The Technology and Livelihood Education teachers in Trece Martires Division, Province of Cavite were taken as representative samples of this study.

Statistical Treatment of Data

The following statistics has been used to analyze the gathered data.

1.   t-test. This is used to measure the degree of difference between the pretest and the posttest mean scores of the pupils, and this is used to answer the sub-problem no. 5.

The following formula was utilized to compute the t-test.

2.   Weighted mean. This is used to determine the assessment of the teachers and administrators and experts on the acceptability of the skill book.

3.   Percentage. This is used to compare the sizes of different magnitudes.

A 5- point Likert scale was used to determine the acceptability of the interactive skill book. This is used to answer the sub problem no.3. The scales used are as follows:

Option	Equivalent	Verbal Interpretations
5	4.20 - 5.00	Very High Competent (VHC)
4	3.40 - 4.19	High Competent (HC)
3	2.60 - 3.39	Fairly Competent (FC)
2	1.80 - 2.59	Least Competent (LC)
1	1.00 - 1.79	Not Competent (NC)

RESULTS AND DISCUSSION

Sub-Problem No. 1. What is the level of computer proficiency of teachers in TLE as assessed by themselves, ICT experts and school heads in terms of:

1.1   Basic Computer Operations The computed composite mean values of 3.48 were assessed by the three groups of respondents as highly competent on the level of computer proficiency of teachers in TLE as to basic computer operations.

1.2   Basic Computer Maintenance

In general, the computed composite mean value of 3.40 were rated as highly competent on the level of computer proficiency of teachers in TLE as to basic computer maintenance.

1.3   Word Processor

In general, the computed composite mean values of 4.08 were interpreted by the respondents as highly competent on the level of computer proficiency of teachers in TLE as to word processor.

1.4   Presentation Software

With regard to the assessment of respondents in the level of computer proficiency of teachers as to presentation which had been rated and interpreted as highly competent supported with an overall weighted mean value of 3.75.

Sub-Problem No. 2. Is there a significant difference among the assessment of the respondents on the above mentioned variables?

As to basic computer operations the obtained F-computed value of 3.50 is lower than the F-critical value of 3.52 at 5% level of significance. Therefore, there is no significant difference on the respondents' assessment and this leads to accept the null hypothesis.

In terms of basic computer maintenance, the obtained F-computed value of 1.00 is lower than the F-critical value of 3.35 at 5% level of significance. Therefore, there is no significant difference in the technology operations and concepts, and this leads to accept the null hypothesis.

As to word processor, the obtained F-computed value of 1.00 is lower than the F-critical value of 3.32 at 5% level of significance. Therefore, there is no significant difference in the word processor and this leads to accept the null hypothesis.

As to presentation software, the obtained F-computed value of 2.00 is lower than the F-critical value of 3.32 at 5% level of significance. Therefore, there is no significant difference in presentation software and this leads to accept the null hypothesis.

Sub-Problem No. 3. What are the problems encountered by the respondents in using computer as instructional media in TLE as perceived by the respondents?

The number one (1) problem encountered by the respondents was the Lack of teacher's knowledge and skills about how to use computer instructions with an obtained frequency of 50; Indifferent attitudes of teachers in the implementation the program with a frequency of 48 rank 2; Inappropriate instructional program with a frequency of 47 rank 3; Lack of time for integrating ICT in classroom session with frequency of 45 rank 4; lack of computer units with a frequency of 43 rank 5; lack of teacher's confidence with a frequency of 41 rank 6; Insufficient funds resources to finance the maintenance and purchase new computers with a frequency of 40 rank 7; and Lack of technical support with a frequency of 39 rank 8.

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PROBLEMS ENCOUNTERED BY THE 3rd YEAR DRAFTING STUDENTS IN DEVELOPING PROTOTYPE RESEARCH: AN ASSESSMENT

Cynthia M. Reblando

INTRODUCTION

Industrial technology is a profession that requires education and experience to understand and apply technological and managerial sciences to industry. To turn out technically and technologically self-sufficient and self-disciplined graduates capable of contributing to the economic development of the country either as hard workers or entrepreneurs through its programs, the College of Industrial Technology curriculum was designed to meet this mission.

Technical drawing, also known as **drafting** or **draughting**, is the act and discipline of composing plans that visually communicate how something functions or has to be constructed. Drafting is the visual language of industry and engineering. People who communicate with technical drawings, (those who design and those who are tradespeople), may use technical standards that define practical symbols, perspectives, units of measurement, notation systems, visual styles, or layout conventions.

To provide appropriate professional technical, technological and training in industrial technology and promote research, production and entrepreneurship, the College of Industrial Technology incorporate prototype research to all CIT students in the third year level. This was undertaken in the subject Methods of Research on the first semester and Feasibility Study on the second semester.

A **prototype** research is the main concern of the subject Method of Research / Feasibility Study to be taken by the third year BSIT students of CIT regardless of their major. It is a method of research where a sample or model is built to test a concept or process or to act as a thing to be replicated or learned from. A prototype is designed to test and trial a new design to enhance precision by system analysts and users. Prototyping serves to provide specifications for a real, working system rather than a theoretical one.

In lieu of the above, the researchers came up a research paper that will determine the problems encountered by the third year students of BSIT major in Drafting in producing their prototype research. Results of the study will serve as guide to all educators so that revisions, upgrading and updating of the programme can be undertaken in areas where the students encountered problems.

Statement of the Problem

The study aimed to determine the problems encountered by the third year students of BSIT major in Drafting, school year 2019 – 2020.

Specifically, the study seek to answer the following subproblems:

1.   What is the profile of the third year students of BSIT major in Drafting in terms of:

1.1   age;

      1.2   civil status;

      1.3   gender; and

      1.4   socio-economic status?

2.   What are the problems encountered by the third year students in BSIT major in Drafting in terms of:

      2.1   time-frame;

      2.2   design;

      2.3   materials;

      2.4   construction process; and

      2.5   production cost?

3.   Based on the findings, what recommendations can be forwarded to help students solve the problems encountered?

Scope and Limitations of the Study

This study was limited to the eighteen (11) third year Drafting students of the College of Industrial Technology, school year 2019 – 2020.

The study was concern only on the problems encountered by the students in developing the prototype research terms of: time-frame; design; materials; construction process; and production cost.

The study was also limited to the recommendations offered and forwarded by the subject teachers to help students solve these problems.

Significance of the Study

The results of the study will be beneficial to the following group of individuals.

Students. They will develop the crucial concepts of how to design and construct a prototype research. This will also help them apply drafting concepts in real life situations. More specifically, this will change their notion, that the drawing and drafting subjects are not that difficult rather it is an interesting and enjoyable one.

Drafting Professors/Teachers/Trainers. Findings of the study will help drafting teachers motivate students under the challenge of the lessons being discussed and to guide and advice them during the making of the prototype research.

Educators. This study will be very useful to all educators in promoting good, original, and salable prototype research. Results of the study can also encourage educators to guide and support morally their respective students in designing their prototype research.

Other Researchers. The study will be beneficial to other researchers because it will serve as guide in making their research paper.

Related Literature and Studies

Related Literature. According MOHE Guidelines at Bahasa Malaysia (2012), most of the prototype produced from researches cannot be commercialized since it is still in the early stage of the process. Therefore, Prototype Research Guidelines Scheme (PRGS) is being introduced to bridge the gap between research discoveries and commercialization towards new technology invention in line with the K-Economy requirement and the New Economic Model implementation. This prototype development is being established to close the gap between laboratory/research discoveries until before commercialization. This includes proof of concept, evaluation, up-scaling, pre-clinical testing and field testing.

Bellis (2012) pointed out the following steps that apply in different ways to different types of inventions: (1) Make a drawing(s) of your invention. If available use the descriptions or drawing from your inventor's logbook. Keep all sketches in your logbook; (2) If you know how you might want to make a CAD drawing of your invention. Simple CAD (computer aided design) programs exist that you might be able to use yourself; (3) Make a non-working model of your invention out of foam, wood, metal, paper, cardboard. This will test your invention's size and form; (4) Make or plan how to make a working model of your invention. Depending on your invention, you might be casting in metal or plastic. Write down all the materials, supplies and tools you may need and identify the steps needed to assemble your prototype. You might need simple to complex engineering drawings for any electronics. At this stage you might want to pick up a book or kit on prototyping. You might need to contact professional for quotes on what any work you need done will cost; (5) You have to figure out how much a working prototype will cost to make. Remember one copy might be very expensive to make. Mass production brings down the cost per unit. If you can make your own prototype and you can afford it, do it; (6) Do your research on the latest methods and alternatives. For example, plastic injection molds are expensive, however, a method of CAD called "Rapid Prototyping" is an alternative; and (7) Depending on your invention, your prototype might be very expensive to make. If that is the case you might want to produce a virtual prototype. Today, computer programs can simulate an invention in 3D and can test that an invention does work. Virtual prototypes can be made by a professional and they cost a thousand or more. They can make you a video or CD animation of your invention working. You may have to create a real working model of your invention if perhaps a buyer or licensee demands one. You may have to hire a professional prototyper, engineer or designer at some point in this process. Our Prototyping Resources includes directories of professionals.

Related Studies. Edison and Woods (2005) study has shown that the use of distributed system technology is useful and important in measurement, monitoring and control systems. With further development these techniques will enable straightforward construction of applications which are easily configured, expanded, modified, and maintained.

Fenandez, et. al. (2006), study aimed to illustrate the feasibility of using MA to generate a prototype DRM model specifically applied to earthquake disaster risk management. This is a preliminary study aiming at deriving a practical strategy method and/or tool for reducing disaster risk and for assessing sound practice in DRM for cities. Formally, the prototype morphological model performs well. However, the current model is not yet fully developed; its content needs to be expanded and refined. For example, there are other parameters that have not been integrated into the model. It is important to understand the method's potential more fully, i.e. in terms of how to apply it in a real cases. Completing the work will help validate the

prototype. Completion entails combining MA with other operations research and/or decision analysis methods, as initially proposed.

Synthesis of the Related Literature and Studies

The related literature and studies cited in this study were relevant in such a way that all dealt with the construction and problems encountered in developing a prototype research.

The literature written by Bellis (2012) enumerated the steps to be followed in developing a prototype research. These steps when taken into consideration will help students solve the problems they encountered in constructing their prototype research.

On the other hand, the studies conducted by Edison and Woods (2005) and Fernandez (2006) were also relevant to the study because they emphasized the importance of modifying and refining their developed prototyped research. It is also understood that the prototype research developed by the third year Drafting CIT students must also be modified and refined.

METHODOLOGY

This study utilized the descriptive method of research using questionnaire as the major data-gathering instrument.

According to Jackson (2009), descriptive research allows quantitative and qualitative descriptions of current problems encountered in terms of the aforementioned variables as assessed by the administrator, teachers and student respondents. Besides describing "what exists", it also supplies both factual and practical information that can be used to evaluate conditions. Hence, the descriptive method of research is concerned with the collection of data in order to answer queries concerning present status of certain phenomena.

Survey questionnaire was designed to obtain information concerning the problems encountered by the third year BSIT major in Drafting students in developing their prototype research and the recommendations offered by the subject teachers to help students solved these problems.

Respondents of the Study

Purposively, this study utilized the eighteen (11) third year students of the Bachelor of Science in Industrial Technology major in Drafting enrolled in Method of Research and Feasibility Study.

The study also utilized the five (5) Drawing / Drafting Instructors and Professors of Eulogio "Amang" Rodriguez Institute of Science and Technology (EARIST) to give their recommendations and solutions to the problems encountered by the students.

FINDINGS

The study reveals the following findings:

As to Age: Table 1 shows the age range of the students.

TABLE 1
Profile of the Students as to Age

Age Range	f	%
17 – 18 years old	0	0
19 – 20	8	72.72
21 – 22	1	9.1
23 – 24	2	18.18
Total	**11**	**100**

It can be gleaned from Table 1 the following age range of the students: 8 or 72.72 percent of them belongs to the age range of 19–20 years old; 1 or 9.1 percent of them to the age range of 21– 22 years old; and 2 or 18.18 percent of them to the age range of 23 – 24.

Table 1 reveals that all the eighteen student respondents were matured enough to meet the challenges in developing their prototype research.

As to Civil Status. Table 2 presents the civil status of the students.

TABLE 2
Profile of Students as to Civil Status

Civil Status	f	%
Single	11	100
Total	**11**	**100**

Table 2 describes that all the eleven (11) or 100 percent of the students were single.

Table 2 reflects that all the students had enough time to develop their prototype research because they were all singles having no financial responsibilities with their own family.

As to Gender. Table 3 reveals the gender of the students.

TABLE 3
Profile of Students as to Gender

Gender	f	%
Female	3	27.27
Male	8	72.72
Total	**11**	**100**

Table 3 manifests that there are 3 or 27.27 percent of the students were females; and 8 or 72.73 percent of them were males.

As to Socio-Economic Status. Table 4 reflects the students' socio-economic status.

Table 4 shows that there is 1 or 9.09 percent of the students belongs to the monthly family income or P 10,000 – P 15,000; 5 or 45.45 percent of them belongs to the monthly family income of P 16,000 – 20,000; and five (5) or 45.45 percent of them belongs to the monthly family income of P 21,000 and above.

TABLE 4
Profile of Students as to Socio-Economic Status

Monthly Income	f	%
P 10,000 - P 15,000	1	9.09
16,000 - 20,000	5	45.45
21,000 and above	5	45.45
Total	**11**	**100**

Table reveals that majority of the students family income were low.

As to the Problems Encountered. Table 5 presents the problems encountered by the students in terms of the aforementioned variables.

TABLE 5
Problems Encountered by the Students

Problems Encountered	Weighted Mean	Rank
1. Time-Frame	3.33	1.5
2. Design	3.89	4
3. Materials	3.33	1.5
4. Construction process	4.16	5
5. Production cost	3.67	3

Legend:
4.50 – 5.00	Very Strongly Agree (VSA)
3.50 – 4.49	Strongly Agree (SA)
2.50 – 3.49	Agree (A)
1.50 – 2.49	Moderately Agree (MA)
1.00 – 1.49	Least Agree (LA)

Table 5 reveals the following mean and rank of the problems encountered by the students: as to time-frame and materials a respective weighted mean o f 3.33 interpreted agree, rank 1.5; as to production cost, a weighted mean of 3.67 interpreted strongly agree, rank 3; as to design, a weighted mean of 3.89 interpreted strongly agree, rank 4; and as to construction process, a weighted mean of 4.16 interpreted strongly agree, rank 5.

Based on the rank presented in Table 5, the following were the problems encountered by the students: number 1 problem was the construction of the prototype research; second problem they encountered was the design of the prototype research; third was its production cost; and last were the materials and time-frame in developing the prototype research.

As to the Recommendations Forwarded. The researchers, as well as, the subject teachers forwarded the following recommendations: Inclusion of the following topics in the course syllabi of Drawing and Drafting subjects: proposal and design of prototype research; steps to be followed in the construction and development of a prototype research in an efficient and effective manner; and speed in planning and execution of a plan.

CONCLUSIONS

From the findings of the study, the following conclusions were drawn:

1.   The profile of the students were appropriate to their year level and course.

2.   The students encountered problems in developing their prototype research as regard to the aforementioned variables.

RECOMMENDATIONS

In the light of the findings and conclusions, the following recommendations were forwarded by the researchers and subject teachers:

1.   Inclusion of the following topics in the course syllabi of Drawing and Drafting subjects: proposal and design of prototype research; steps to be followed in the construction and development of a prototype research in an efficient and effective manner; and speed in planning and execution of a plan.

2.   Encourage and motivate students to develop a well-organized and properly refined and modified prototype research.

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DESIGN AND DEVELOPMENT OF AUTOMATIC UVC LIGHT DISINFECTION MACHINE

Rene Gene R. Repique

INTRODUCTION

Personal protective equipment (PPE), including surgical masks and face shield, is crucially important to the safety of both patients and medical personnel, particularly in the event of infectious pandemics. As the incidence of Coronavirus Disease (COVID-19) is increasing exponentially in the Philippines and worldwide, healthcare providers demand for these necessities is currently outpacing supply. As such, strategies to safely expand the lifespan of the supply of medical equipment are critically important. Some hospitals have already begun using UV-C light to sterilize N95 respirators, but many lack the space or equipment to implement existing protocols.

In this study our main mission is to provide support to healthcare organizations that are looking for alternative methods to extend their reserves of PPE. To alleviate the PPE shortage is to providing a way to sterilize PPE to allow safe daily re-use. This method would be preferred compared to re-use without sterilization.

According to a scientist at Columbia University, FAR UV-C is effective against SARS-CoV-2, the virus that causes COVID-19. FAR UV-C (also called germicidal UV) is a part of the ultraviolet spectrum that can inactivate pathogens like bacteria and viruses. It utilizes specific wavelengths of the ultraviolet spectrum, typically between 207 to 222 nanometers. UV causes photochemical in DNA and RNA resulting to inactivation of microbes and failure to reproduce. Viruses are not technically living organisms, so germicidal UV technically "inactivates" viruses. It is very efficient in times of COVID-19 since it can live on certain surfaces for up to three days and can travel through the air. Therefore, germicidal UV is a great tool to disinfect air and surfaces. By using this as an advancement of disinfection through face shield, it can greatly help to lessen the threat of spreading the COVID-19.

General Objective

The main objective of this project was to To Have a project that will surely lessen the much consumption of face shield by recycling it through disinfection and to ensure the safeness and efficiency of the product to user making sure of 99.9% secureness of killing the viruses To prevent and mitigate the spread of the virus.

Statement of the Problem

This project aimed to build proposed Automatic Far UV-C Light Disinfection Machine. It sought to answer the following research questions:

1. Who is the beneficiary of this project?

2. How can it help in Medical Aspects?

3. What sources of electricity are going to use?

4.   What is the assessment of the 3 groups of respondents namely: student, professional and community to automatic UV-C light disinfection machine in terms of criteria? Is there any significant differences?

a.   Functionality

b.   Usability

c.   Reliability

d.   Efficiency

e.   Maintainability

METHODOLOGY

Data Gathering Procedure

1.   Deciding the title of the thesis, Automatic FAR UV-C Light Disinfection Machine.
2.   Gathering data through research.
3.   Presentation of the proposed title.
4.   Designing the project's structure and circuitry.
5.   Deciding on where the researchers will construct their design project.
6.   Collection of materials and equipment that would be used for the whole project.
7.   Construction and wiring the project.
8.   Testing and trial of the output

SUMMARY OF FINDINGS

This chapter shows the findings resulting from the study of Automatic UV-C Light Disinfection Machine.

SOP 1. Who is the beneficiary of this project?

The people in highly infected rate areas are the number one benefactor of this project where the disinfection of PPEs (personal protective equipment's) is greatly needed for our frontline workers or in everyday use. It can also help to inform the other people the importance of proper disinfecting PPEs and to help lessen the spread of viruses.

SOP 2. How can it help prevent infections?

UV-C radiation is a known disinfectant for air, water, and nonporous surfaces. UVC radiation has effectively been used for decades to reduce the spread of bacteria, such as tuberculosis, SARS and more.

SOP 3. What energy source can be use?

We use standard home power outlet (220V).

SOP 4. What is the assessment of the 3 groups of respondents namely: student, professional and community to automatic UV-C light disinfection machine in terms of criteria? Is there any significant differences?

The following criteria were being assessed by group of three respondents' student, professional and community.

A. ASSESSMENT OF FUNCTIONALITY

Table 1
Assessment of the 3 Groups of Respondents to Automatic UV-C Light Disinfection Machine in Terms of Functionality

Indicators	Student		Professional		Community		Composite Mean		Rank
	WM	VI	WM	VI	WM	VI	WM	VI	
1. Functional Completeness. Degree to which the set of function covers all the specified tasks and user objectives.	4.30	VS	4.10	VS	4.26	VS	4.00	VS	3
2. Functional Correctness. Degree to which the System provides the correctness of results with the needed degree of precision.	4.10	VS	4.11	VS	4.25	VS	4.33	VS	1
3. Functional appropriateness. Degree to which the functions facilitate the accomplishment of specified tasks and objectives.	4.11	VS	4.30	VS	4.30	VS	4.27	VS	2
Overall Weighted Mean	**4.17**	**VS**	**4.17**	**VS**	**4.27**	**VS**	**4.20**	**VS**	

The Student, Professional and Community Users on Functionality rated most correctness and functional appropriateness which received "VERY SATISFACTORY" rating from the group of UV-C LIGHT DINFECTION MACHINE Users having an overall mean value of 4.17 for the students, 4.17 for the Professional and 4.27 for the Security Users as evidenced by the obtained weighted mean values of 4.20.

B. ASSESSMENT OF USABILITY

The Student, Professional and Community Users on Functionality rated most correctness and functional appropriateness which received "VERY SATISFACTORY" rating from the group of UV-C LIGHT DINFECTION MACHINE Users having an overall mean value of 4.50 for the students, 4.50 for the Professional and 4.50 for the Security Users as evidenced by the obtained weighted mean values of 4.50.

Table 2
Assessment of the 3 Groups of Respondents to Automatic UV-C Light Disinfection Machine in Terms of Usability

Indicators	Student		Professional		Community		Composite Mean		Rank
	WM	VI	WM	VI	WM	VI	WM	VI	
1. Operability. Degree to which the system has attributes that make it easy to operate and control.	4.50	VS	4.50	VS	4.50	VS	4.50	VS	1
2. Accessibility. Degree to which the system can be used by people with widest range of characteristics and capabilities to achieve a specified context of use.	4.50	VS	4.50	VS	4.50	VS	4.50	VS	2
Overall Weighted Mean	**4.50**	**VS**	**4.50**	**VS**	**4.50**	**VS**	**4.50**	**VS**	

C.   ASSESSMENT OF RELIABILITY

Table 3
Assessment of the 3 Groups of Respondents to Automatic UV-C Light Disinfection Machine in Terms of Reliability

Indicators	Student		Professional		Community		Composite Mean		Rank
	WM	VI	WM	VI	WM	VI	WM	VI	
1. Maturity. Degree to which the system meets needs for reliability under normal operation.	4.41	VS	4.20	VS	4.70	VS	4.49	VS	1
2. Availability. Degree to which the system is operational and accessible when required for use.	4.49	VS	4.70	E	4.20	VS	4.41	VS	2
Overall Weighted Mean	**4.45**	**VS**	**4.45**	**VS**	**4.45**	**VS**	**4.45**	**VS**	

The Student, Professional and Community Users on Functionality rated most correctness and functional appropriateness which received "VERY SATISFACTORY" rating from the group of UV-C LIGHT DINFECTION MACHINE Users having an overall mean value of 4.45 for the students, 4.45 for the Professional and 4.45 for the Security Users as evidenced by the obtained weighted mean values of 4.45.

D. **ASSESSMENT ON EFFICIENCY**

Table 4
Assessment of the 3 Groups of Respondents to Automatic UV-C Light Disinfection Machine in Terms of Efficiency

Indicators	Student		Professional		Community		Composite Mean		Rank
	WM	VI	WM	VI	WM	VI	WM	VI	
1. Time Behaviour. Degree to which the response and processing time and throughout rates of system, when performing its functions, meet requirements.	3.20	S	4.00	VS	4.09	VS	4.00	VS	1
2. Resource utilization. Degree to which the amount and types of resources used by the system, when performing its functions, meet requirements.	3.50	VS	4.12	VS	4.20	VS	3.75	VS	3
3. Capacity. Degree to which the maximum limits of the system parameter meets requirements	3.50	VS	4.09	VS	4.22	VS	3.89	VS	2
Overall Weighted Mean	**3.40**	**VS**	**4.07**	**VS**	**4.17**	**VS**	**3.88**	**VS**	

The Student, Professional and Community Users on Functionality rated most correctness and functional appropriateness which received "VERY SATISFACTORY" rating from the group of UV-C LIGHT DINFECTION MACHINE Users having an overall mean value of 3.40 for the students, 4.07 for the Professional and 4.17 for the Security Users as evidenced by the obtained weighted mean values of 3.88.

E. **ASSESSMENT ON MAINTAINABILITY**

Table 4
Assessment of the 3 Groups of Respondents to Automatic UV-C Light Disinfection Machine in Terms of Maintainability

Indicators	Student		Professional		Community		Composite Mean		Rank
	WM	VI	WM	VI	WM	VI	WM	VI	
1. Modularity. Degree to which the system is composed of discrete components such that a change to one component has minimal impact on other components.	3.60	VS	4.20	VS	4.40	VS	4.40	VS	1
2. Reusability. Degree to which an asset can be used in more than one system, or in building other assets.	3.59	VS	4.30	VS	4.10	VS	4.09	VS	2
3. Modifiability. Degree to which the system can be effectively and efficiency modified without introducing defects or degrading existing system quality.	3.70	VS	4.49	E	4.19	VS	3.72	VS	3
Overall Weighted Mean	**3.63**	**VS**	**4.33**	**VS**	**4.23**	**VS**	**4.07**	**VS**	

The Student, Professional and Community Users on Functionality rated most correctness and functional appropriateness which received "VERY SATISFACTORY" rating from the group of UV-C LIGHT DINFECTION MACHINE Users having an overall mean value of 3.63 for the students, 4.33 for the Professional and 4.23 for the Community Users as evidenced by the obtained weighted mean values of 4.07.

Respondents

All assessment of the three groups of respondents is: Student, Professional and Community.

Five – Point Likert Scale

Numerical Scale	Average Response	Adjective Rating	Verbal Interpretation
5	4.50-5.00	Excellent	E
4	3.50-4.49	Very Satisfactory	VS
3	2.50-3.49	Satisfactory	S
2	1.50-2.49	Fair	F
1	1.00-1.49	Poor	P

Table 5
Overall Assessment of Three Groups of Respondents

Criteria	Student	Professional	Community	Composite Mean	VI	Rank
Functionality	4.17	4.17	4.27	4.20	VS	3
Usability	4.50	4.50	4.50	4.50	E	1
Reliability	4.45	4.45	4.45	4.45	VS	2
Efficiency	3.40	4.07	4.17	3.88	VS	5
Maintainability	3.63	4.33	4.23	4.07	VS	4
Overall Composite	**4.03**	**4.30**	**4.32**	**4.22**	**VS**	

Table 5 shows the result of the overall assessment of the three groups of respondents, namely: Student, Professional and Community. The overall composite mean has a numerical value of 4.22 interpreted as "Very Satisfactory ".

A.   ASSESSMENT ON FUNCTIONALITY

Rank 3 is "Functionality" with composite mean of 4.20 and interpreted as "Very Satisfactory ".

B.   ASSESSMENT ON USABILITY

Rank 1 is "Usability" with a composite mean of 4.50 and interpreted as "Excellent ".

C. ASSESSMENT ON RELIABILITY

Rank 2 is "Reliability" with a composite mean of 4.45 and interpreted as "Very Satisfactory ".

D. ASSESSMENT ON EFFICIENCY

Rank 5 is "Efficiency" with composite mean of 3.88 and interpreted as "Very Satisfactory ".

E. ASSESSMENT ON MAITAINABILITY

Rank 4 is "Maintainability "with a composite mean of 4.07 and interpreted as "Very Satisfactory".

CONCLUSION

A.   According to the evaluation result of functionality of the system, the degree to which the sets functional completeness, correctness and appropriateness were interpreted as "Very Satisfactory" by the respondents, which means that the functionality of Smart Face Shield with Emergency Features using AUTOMATIC UV-C LIGHT DISINFECTION MACHINE provided the specific tasks and user objectives , correctness of results with the needed degree of precision, and facilitated the accomplishments of the specified task and objectives.

B.   According to the evaluation result of the usability of the system, the degree to which the sets operability and accessibility were interpreted as "Excellent" by the respondents, which means that the usability of Smart Face Shield with Emergency Features using AUTOMATIC UV-C LIGHT DISINFECTION MACHINE had an attribute that make it easy to operate and control and can be used by the people with widest range of characteristics and capabilities to achieve a specified context of use.

C.   According to the evaluation result of the reliability of the system, the degree to which the sets maturity and availability were interpreted as "Very Satisfactory" by the correspondents, which means that the reliability of AUTOMATIC UV-C LIGHT DISINFECTION MACHINE has met the needs for reliability under normal operation and it was operational and was accessible when required for use.

D.   According to the evaluation result of the efficiency of the system, the degree to which the sets time behavior, resource utilization and capacity were interpreted as "Very Satisfactory" by the respondents, which means that the efficiency of AUTOMATIC UV-C LIGHT DISINFECTION MACHINE met the requirements of performing its functions.

E.   According to the evaluation result of the maintainability of the system, the degree to which the sets modularity, reusability and modifiability were interpreted as "Very Satisfactory" by the respondents, which means that the maintainability of AUTOMATIC UV-C LIGHT DISINFECTION MACHINE was composed of discrete components such that a change to one component had minimal impact on other components, an asset can be used in more than one system, or in building other assets and can be effectively and efficiently modified without introducing defects or degrading existing system quality.

RECOMMENDATION

To fully developed the quality of our study, we highly recommend the future worker/developer of the same project in the best way possible,

For the development/innovation of the study for the succeeding researchers, -explore more on other disinfecting ways to put into the machine.

Internet of Things into the UV-C Light Disinfecting Machine.

Putting thermo sensor for monitoring heat from the inside.

CHEST-RIG EMBEDDED SOCIAL DISTANCING SENSOR USING ARDUINO UNO

Ador G. Utulo
Bernard C. Fabro
Caroline J. Aga-ab

INTRODUCTION

The COVID-19 pandemic has drastically changed the way we live, interact with other people and perform our social activities. Minimum health protocols are imposed and implemented by the government to help minimize the spread of the virus, specifically, proper use of face masks, face shields and physical distancing in public places. Studies shows that the possibility of transmission of the virus occurs when there is a close contact, within at least 1 meter, with a person infected by the virus and practicing physical or social distancing helps limit the spread of the disease.

Covid droplets are transmitted by an individual from person to person when they talk, sneeze or cough. According to World Health Organization, "social and physical distancing measures aim to slow the spread of disease by stopping chains of transmission of COVID-19 and preventing new ones from appearing. These measures secure physical distance between people (of at least one meter) …"

As observed nowadays, social distancing protocols are not imposed as strictly as they were before when the ongoing pandemic was still in its early months. In most public places, the current existing protocols for social distancing now are signage warnings or stickers on the floor that indicates how far everyone should distance themselves from each other. Maintaining the social distancing should be observed extensively but in order to properly implement it adequately, it will require having multiple personnel to watch and rotate in every corner of the establishment to maintain the protocol. Social distancing outside of their home is almost little to nothing as long as facemasks are present then the social distancing protocol is often disregarded or unknowingly ignored. This unsafe occurrence is one of the big factors that arises the cases of infection every day in our country.

To address the common problem on physical and social distancing, a wearable device is developed to secure safe distance between individuals. The device uses a sensory type component that can help implement the governments' protocol on social distancing. This device works by using an ultrasonic sensor pulsing out high and low sound waves to measure the distance between point A to point B and then it bounces back to the transducer. The ultrasonic sensor works by emitting sound waves to measure a certain set distance and receives it back and interprets the data as an electrical signal. Thus, measuring the distance in-between for the safety of the people and abiding by the protocols. This study aims to create a sensory device that can sense a target object within a specific distance in front and from the backside of the user and gives alert if physical distancing is ignored.

The "Chest-Rig Embedded Social Distancing Sensor using Arduino Uno" is a device that will alarm whenever the ultrasonic sensors detect an object within the set distance and triggering its alarm buzzers by the systems. Developing such a device may help the current situation. This device will be powered by a 9 –volts battery source, making this a portable wearable device or plug-and-play device.

This device is will be significant to individuals, "authorized person outside of residence", who is mostly outdoors or when going to crowded places so that they may observe safe physical and social distancing. This will notify the individual whenever unsafe social distance occurs between individuals who are interacting with one another. This device can be used to strictly implement the social distancing protocols everywhere, mostly inside the establishments and places where there is high risk of probable exposure to the virus like markets, mall or even in social gatherings.

METHODOLOGY
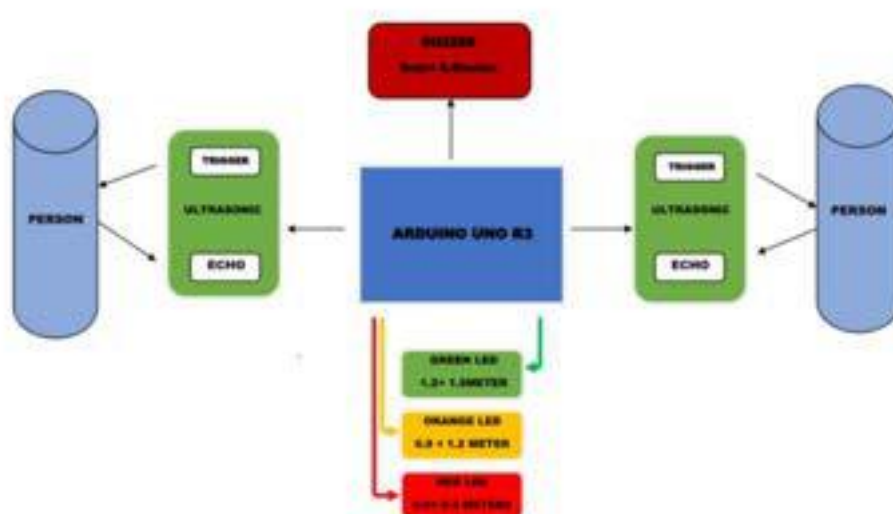
Figure 1. *Block Diagram of Chest-Rig Embedded Social Distancing Device*

Applied research is used in conceptualizing this project/device. Arduino Uno R3 is used as the main controller of the device using C++ as the programming language. The following are the listed components of the device and its corresponding function in the system.

Arduino Uno R3 – is a microcontroller board based on a removable, dual-inline-package (DIP) ATmega328 AVR microcontroller. This microcontroller has 20 digital input and output pins where 6 of the pins can be used as an output Pulse Width Modulation (PWM) and another 6 pins can be used for analog inputs. This microcontroller uses C++ language for easy-to-use hardware and software results. The main function of this Microcontroller in the project is to be the brain of the device where it holds the program in order to send the programmed data signals into the integrated components via electronics wire where it originated from the microcontroller board.

Ultrasonic Sensors – is an electronic device that measures the distance of a target object by pulsing ultrasonic soundwaves at a frequency that is too high for humans to hear, and then converts the feedback sound into an electrical signal thus measuring the distance between point A and point B based on the time of the echo sounds to return to generate a feedback simultaneously to measure the distance. This component will be used as the Input signal to generate a piece of information back to the Microcontroller board to be distributed to the shown output signaling components.

Green LED –light-emitting diode is a semiconductor device that emits light when an electric current passed through, and Light is produced when the particles that carry the current (known as electrons and holes) combine within the semiconductor material. This component will be one of the visual output signals where it will light up indicating that the distance detected is less than 1.5 meters to 1.2 meters.

Orange LED - light-emitting diode is a semiconductor device that emits light when an electric current passed through, and Light is produced when the particles that carry the current (known as electrons and holes) combine within the semiconductor material. This component will be one of the visual output signals where it will light up indicating that the distance detected is less than 1.2 meters to 1 meter.

Red LED – light-emitting diode is a semiconductor device that emits light when an electric current passed through, and Light is produced when the particles that carry the current (known as electrons and holes) combine within the semiconductor material. This component will be one of the visual output signals where it will light up indicating that the distance detected is less than 1 meter to 0.6 meters.

Piezo Buzzer – is an audio signaling component where it may be a mechanical, electromechanical, or piezoelectric type. The buzzer works when it is attached to a power and ground source that causes the buzzer to contract or expand in order to produce a loud vibration that we hear from this little device. This component will be the main output signal from the device where it will generate a loud buzzing sound to alarm the nearby people around the user that they are compromising the social distancing protocol. It will buzz indicating that the distance detected is 0.6 meters.

9v Battery - are commonly made of six individual cells that are then enclosed in a singular wrapper to form a block, and the stored chemical energy in the battery converts into electrical energy which travels out of the battery traveling through the circuitry and re-enters back into the opposite end of the source. This will be the source of energy for the project, it is compact and small but it delivers the needed power source for the project.
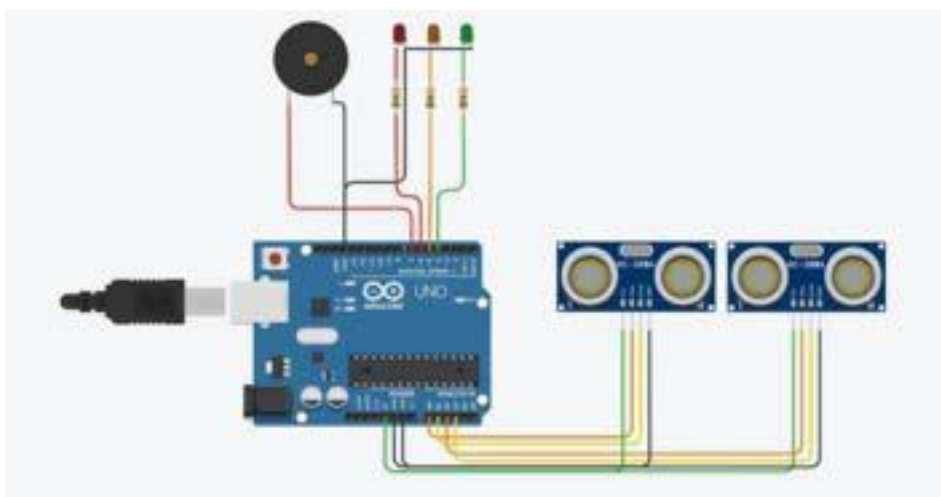
Figure 2. *Schematic Diagram of Chest-Rig Embedded Social Distancing Device*

RESULTS AND DISCUSSION

Table 1
Look-Up Table for the I/O Devices

	Green	Orange	Red	Buzzer
S1 (Front)	1.5-1.2M	1.2-1M		
1.2M < d < 1.5 M	1	0	0	0
1M < d < 1.2 M	1	1	0	0
d < 0.5 M	1	1	1	1
S2 (Back)				
1.2M < d < 1.5 M	1	0	0	0
1M < d < 1.2 M	1	1	0	0
d < 0.5 M	1	1	1	1

This table (Table 1) shows the functionality this device shown by the input and output components: Two Ultrasonic sensors, and outputs: LED'S, Buzzer. The I/O devices are working in Sync that detects the distance between the set distance by the Microprocessor where the LEDs indicate it in order of whenever the Green LED light detects the distance is less than 1.5 meter. The Orange Led indicates that the detected distance is less than 1.2 Meters. The Red Led indicates the distance is less than 0.5 meters and then all the LEDs are all lighted up, then the Buzzer is generating a buzzing sound whenever the LEDs are all lighted up. The importance of the results may be used as a future reference for the development or innovation related to this device, wherever it may apply in the future because the concept of this device is broad and can be innovated into another form where it can be more useful and efficient. The known deficiency of the current device is that it cannot detect whether the reflected signal bounces back is coming from a human. The power source is limited. It cannot add more components because it may lack the supply for the whole circuitry. Low power may also affect consistency of the output signals of the circuit.
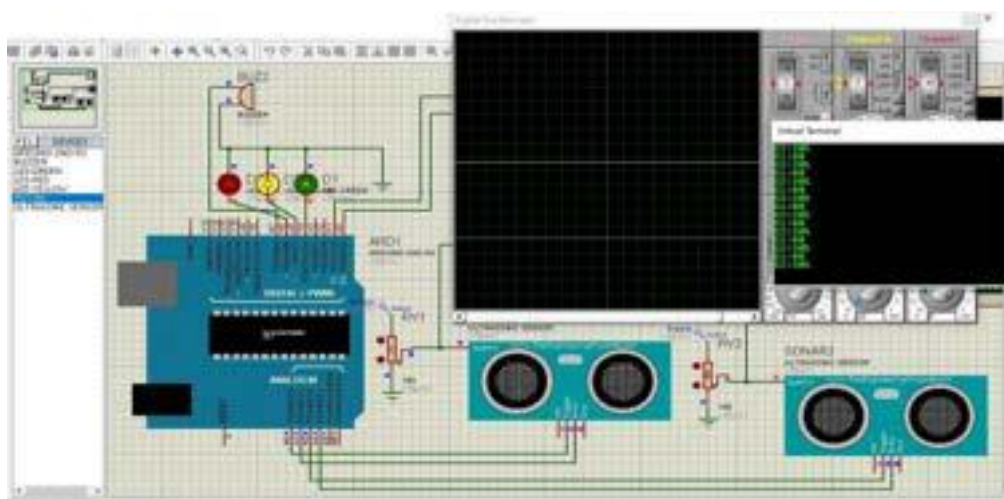
Figure 3a. *Results using Simulation software during Initialization*
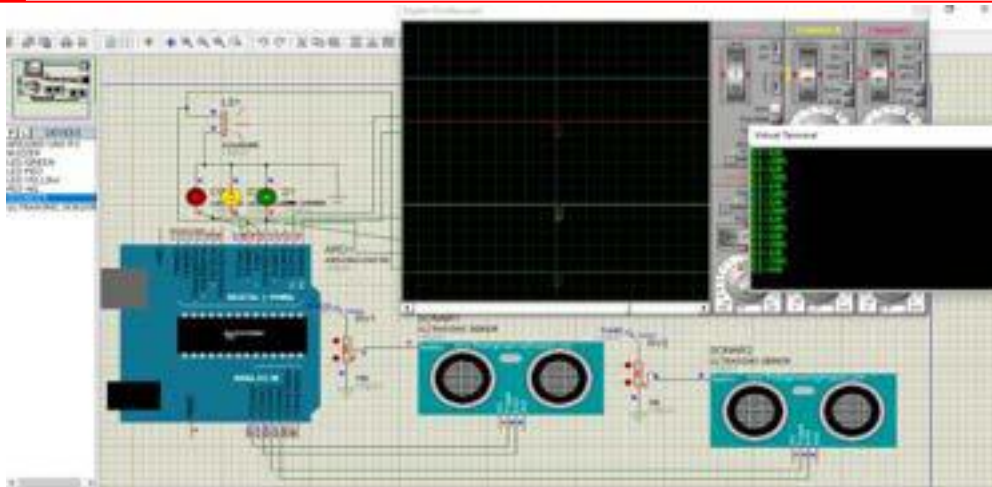
Figure 3b. *Results using Simulation software during Application*

Figurre 4. *Chest-Rig Embedded Social Distancing Sensor Using Arduino*

SUMMARY AND CONCLUSIONS

The current trends in technology development are now geared towards solutions in the COVID-19 pandemic. Minimum health protocols, wearing mask, hand washing and physical distancing are imposed but among these protocols, the latter is hard to observe. Implementing the safe and secure distance of at least 1 meter is ignored by most individuals especially in public places. One way of addressing this problem is through the development of the "Chest-rig Embedded Social Distancing Sensor Using Arduino Uno". This device is developed to properly observe the social distancing protocol imposed and implemented by the government during the COVID-19 pandemic. This is a wearable device that uses ultrasonic sensors and LED that notifies the user in keeping safe distance with other individuals. Studies shows that the direct transmission of virus occurs rapidly when interaction from person to person do not observe proper physical or social distancing. The main idea of this device is to apply embedded system that will send alarm to individual when social distancing protocol is ignored or there is a lapse in observing the protocol.

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THE SMART SHOPPING CART

Minerva C. Zoleta

INTRODUCTION

Ever since technology moved forward, new discoveries and innovations were accomplished each day. This was made possible with the application of science, technology and unlimited ideas of men. Means of transportation has evolved from barefoot to wheeled vehicles to flying and floating transporter. Aircrafts were not only designed to fly above the sky but also it can explore the universe. The way people communicate changed drastically from face to face to online video communication. Even the way people secure their daily needs from market to supermarket.

Shoppers usually form a long queue on their way to the check out counter has improved from a long queue to a shorter queue to doorstep delivery.

The study aims to provide customers with more convenient, quick and efficient shopping experience. The problem in queuing in the checkout counter of the grocery stores will be minimized while shoppers will be provided with necessary sales information. Shoppers will be aware of their billing information during the shopping spree and upon payment, grocery items are good to go because the system is equipped with "to go eco bag". This makes use of the cheap and available technology to design the smart system.

Store management will be easier, sales and inventory will be efficient, more customers can be accommodated, thus minimizing overhead expenses. Customers will be able to properly manage expenses and have more time to spare for family, household chores or other errands.

The Smart Shopping Cart will offer a new system in purchasing goods inside the grocery store thus welcoming a smarter, faster, efficient way of shopping experience.

MATERIALS AND METHODS

The study is a developmental research using the prototyping technique. The study was focused on the design, analysis and development of interfaced components for a Smart Shopping Cart. Prototyping technique was employed that required fabrication or innovation of a full scale working model, sample or release of the design or a revised version of the existing designs to test a concept or process. This was done to prove the viability of the design.

Project Development

The Project Development process has seven steps as shown in Figure 1. It highlights the steps that were undertaken during project progress. It started with the gathering of relevant literature and studies. Upon the conceptualization of the design, materials and equipment needed for the construction were gathered. Followed by the construction of hardware modules. Each module was tested before integration with other modules. The next activity undertaken was the development of software, each program were tested for functionality. Once free of errors, integration of the hardware and software were accomplished. Another set of tests were conducted to ensure proper functionality and efficiency.
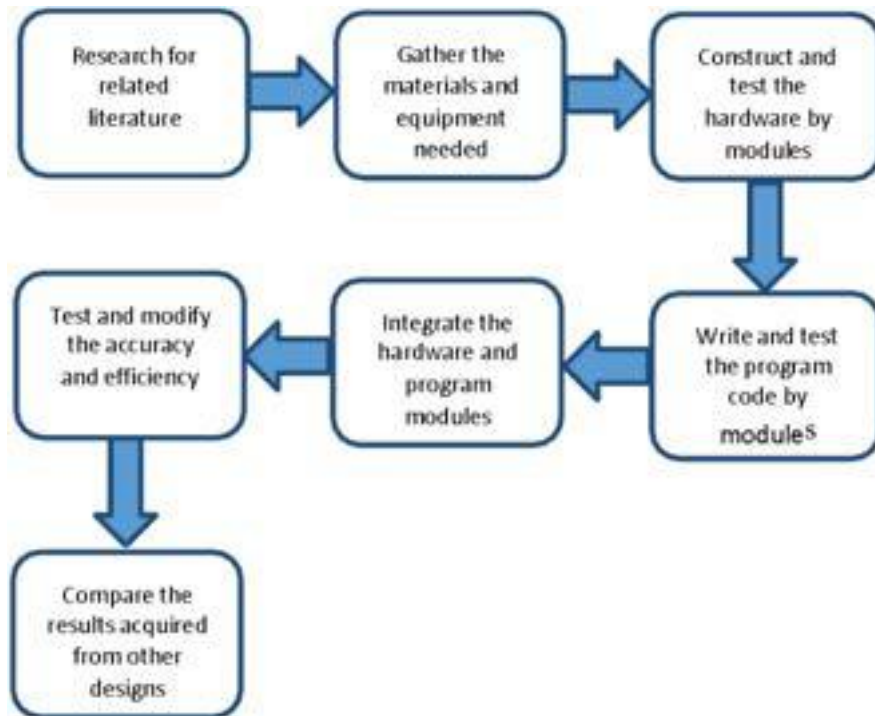
Figure 1. *Project Development Procedure*

Hardware Development

More and more Shoppers prefer buying their daily consumption needs in the supermarket instead in the market. Supermarkets offer shopping convenience, it's like a one stop shop, clean, organized, air conditioned, fresh goods and most of all you don't need to haggle for the price of each items. It's like a walk in the park that is full of things that you need.

Since the number of Shoppers increased by the dozen, especially during this Covid -19 Pandemic, some would opt to order their basic needs online and have them delivered at their doorsteps. But not all have access to the internet to do their online shopping, and some of those who do cannot afford the additional cost of delivery. Still, you would observe the normal scenario in supermarkets where shoppers plaque to form a long queue during their check out. Social distancing is still imposed and the minimal exposure to unknown carriers is encouraged.

With the use of the existing technology, the smart gadget together with the microcontroller, a smart device was designed to address this existing problem.

The project development process has two parts such as the hardware development and the software design. The hardware development part is the construction of the prototype of the modules necessary to perform the tasks defined. It includes the identification of the product, the inclusion of the product in the list and physical enclosure of the product in the cart. The design of the hardware interfacing is the control of the developed modules to integrate the manipulation of the hardware designs. The software design is the system development through coding.
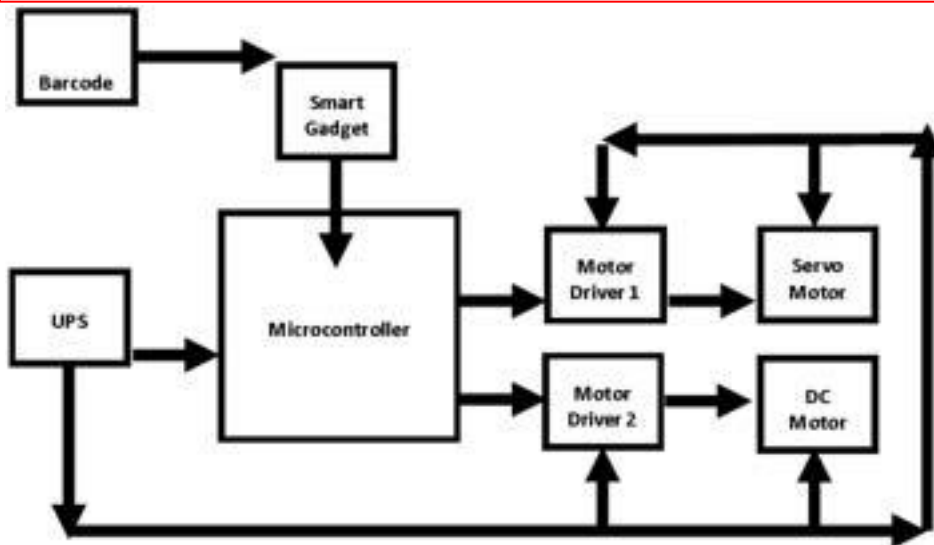
Figure 2. *Block Diagram of the Smart Shopping Cart*

Figure 2 shows the Block diagram of the proposed project. The power supply utilized is an Uninterruptible Power Supply (UPS) that will provide a steady power to the barcode scanner, the microcontroller, the motor driver and the motors. The barcode scanner will serve as the input to the smart gadget. It reads the Uniform Product Code (UPC) in form of barcode from the grocery items once the customer decides to include them in their shopping cart.

The smart gadget can be a tablet, an android device that has the capability to manage database and has the Bluetooth feature. This will serve as the user interface to the device and the Supermarket's Point of Sales (POS) via bluetooth. It has a database that consist the list of grocery items available a particular supermarket where the system will be used. The gadget can be updated every now and then to provide Shopper will sale item information for more shopping convenience. This also serves as the portable POS that summarizes the items placed in the cart and provide the up to date billing information. Once the Customer decides to check out, he just have to send the shopping information to the Main POS for payment, after paying the due amount, the Cahier will unlock the Smart Shopping Cart and take the "to go eco bag" and hand it over to the Customer.

The Microcontroller has a Bluetooth module attached to it that receives signal from the smart gadget via wireless communication. It offers extension port of the on-board Bluetooth module for future interfacing and is powered by 5Vdc power supply. It also controls the DC motors that are responsible for opening and closing the Smart Shopping Carts' windows through the motor drivers that drives the motor back and forth. Sensors were attached to the cart to detect items that are to be placed inside.

The Main POS will be connected to the smart device via Bluetooth to receive the transaction made by the Customer.

There are many other microcontrollers and microcontroller platforms available for physical computing. Parallax Basic Stamp, Netmedia's BX-24, MIT's Handy board to name a few, offer similar functionality. All these tools make the messy details of microcontroller programming and wrap it up in an easy to use package. Arduino simplifies the process of working with microcontrollers, but it offers some advantages like cost, cross platform, simple and clear programming environment, open source and extensible software and hardware.

The Microcontroller will control the opening and closing of the window in the Smart Shopping Cart for the Customer to place his grocery items. The window allows Customer to place his chosen item inside the Cart after it was verified by the scanner. The item will be included in the list and will be displayed on the gadget's screen; it closes slowly giving the Customer enough time to make sure the item is placed inside the car.

A database was stored in the smart gadget for the product information for inventories and sales management. It was designed using Microsoft Access due to its consistent fast performance, high reliability and ease of use. Notifications are also available for special promotions and other information to be provided by the Supermarket management.

RESULTS AND DISCUSSION

The system is made up of hardware and software. The input to the system is a barcode symbol for identification of products available in the supermarket. It used the Universal Product Code (UPC) that is widely used worldwide for tracking trade items in stores. The barcode scanner was used to provide input to the system. The inputs were verified from the database installed in the smart gadget. It only scans the item if the shopper have decided to purchase it passing through an opening of the Smart Shopping Cart where the scanner is positioned that force read the barcode information. Once scanned and verified, the flip door of the cart opens and the item slides down. The shoppers list from the smart gadget will now include the item added to the cart. The same procedure applies to all items to be purchased. Once the costumer decided to end his shopping activity, a button on the smart gadget labelled SEND to POS can be pressed to notify the cashier of the next client to attend to. The process of going to the Check out counter is to pay the bills at the same time for finalization of the purchases made. In case the shopper would like to remove an item/items from the list it can be marked from the system but not yet removed physically. Only at the check out counter that it can be done since the cart is locked and can only be opened by the cashier on duty. The list of items to be removed is already noted in the system. In case there are no such concerns, the Shopper canpay the bill and the Cashier on duty can release the purchased items since the cart it equipped with "togo bag".

CONCLUSION

Technology is meant to make one's life easier. When a problem is found, Engineers come together to solve them using technology. This problem solving will advance the technology for human being and thus provide them with convenience. The Smart Shopping Cart could lessen the risk of acquiring the virus by limiting the number of person having contact with the product, reduce the time spent in identifying items on sale and falling in queue, speed up the conduct of transaction and eliminates the hindrance of unloading the items from the cart. Shoppers could enjoy the time saved by spending it with their loved ones, doing others chores or running other errands.

The prototype will be implemented using the barcode scanner to scan products, Bluetooth module for wireless transmission of data, microcontroller for the motor control, UPS for uninterruptible supply of power, smart gadget as an interface with the POS of the Supermarket.

Based on the survey conducted, Most Shoppers want to experience development in their shopping convenience like centralized ads/promos dissemination, accurate billing charges, fast check out procedure and safer environment.

The Smart Shopping Cart will be of great help for the Shoppers especially at this time because it offers more shopping convenience and time saving, improved billing process and quick packaging system.

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Behavioral

Research

AWARENESS ON REPUBLIC ACT 10627 OF PARENTS AND BARANGAY OFFICIALS IN BARANGAY 409, SAMPALOC, MANILA

Rommuel E, Abanto, RPm

INTRODUCTION

Nothing good comes out about bullying. It could very well change or ruin many people's lives. Parents, community, and students must be aware to prevent bullying. It is a very negative behavior of the society. They do not even know the feeling of a person who experiences the bullying. They must know and take their own initiative to minimize if not totally eliminate. Bullying must stop, for it is destroying the lives and the future of many innocent people.

Bullying uses of a force, treat, abuse or intimidate and aggressively dominate other. The bullied may be attacked through verbal or physical power or in cyber. The reason behind the creation of the group in this act is to know their awareness on the anti-bullying law. The law requires the country to adopt the anti-bullying policy. By any chance bullying is the highest percentage of society violence today, it can be assumed that it will be continue to be an issue in the future.

The victim or the target of bullying might experience the loneliness, loss of confidence, anger, fear and confusion. It may be affect their mental health, academic performance or a physical health. The reason why they adopt bullying attitudes because they want to fit their selves in crowd of high status people to feel better about themselves or they are avoiding to becoming a victim. Sometimes the bullies are also modelling behavior that they have seen or experienced in their own homes.

The Republic Act 10627 or the Anti-Bullying Act of 2013 was signed into law by former President Benigno Aquino III on September 6, 2013. Being a law, it needs to be followed to show respect even to people who don't deserve it; for it is also reflection of society's behavior.

METHOD

The researchers utilized random sampling to obtain the minimum number of respondents needed in the study, both Parents and Barangay Officials of Barangay 409 Sampaloc Manila. The researchers were able to get 143 respondents as sample size, 133 parents and 10 barangay officials.

The data will be gathered, compiled, summarized and will be separated per group. The items will be categorized based on the specific problem that will be raised. The following statistical tools will be applied in the treatment of the data which were weighted mean was used to measure the extent of awareness of parents and barangay officials on the provision of RA 10627 and T test was used to test the difference of the awareness of parents and barangay officials on the provision RA 10627.

Finally, the researchers used the Microsoft Excel and SPSS as tools for the treatment of data.

RESULTS

The data in the table stated below reveal that the computed p-value for the awareness of Republic Act 10627 such as act of bullying, adaption of Republic Act 10627 policies, mechanism to address bullying are 0.178, 0.129, 0.376, while the three others reporting requirements, sanction for non-compliance, implementing rules and regulation are 0.191, 0.131, 0.122 and, repealing clause, and effectivity are 0.196, 0.719 the separability clause is 0.005. Those statement are higher than the 0.05 level of significance, therefore, the separability clause reject the null hypothesis.

Table 1
Difference between the Awareness of
Parents and Barangay Official on the Republic Act 10627

Awareness	t-value	P-value	Decision	Interpretation
1. Acts of Bullying	1.355	0.178	Failed to Reject H_O	Not Significant
2. Adoption of Anti-Bullying Policies	1.529	0.129	Failed to Reject H_O	Not Significant
3. Mechanism to Address Bullying	0.888	0.376	Failed to Reject H_O	Not Significant
4. Reporting Requirements	1.314	0.191	Failed to Reject H_O	Not Significant
5. Sanction for Non-Compliance	1.623	0.131	Failed to Reject H_O	Not Significant
6. Implementing Rules and Regulations	1.663	0.122	Failed to Reject H_O	Not Significant
7. Separability Clause	3.427	0.005	Reject H_O	Significant
8. Repealing Clause	1.301	0.196	Failed to Reject H_O	Not Significant
9. Effectivity	0.361	0.719	Failed to Reject H_O	Not Significant

DISCUSSION

Upon investigation of the data gathered, Awareness on the Republic Act 10627 - The study revealed that the awareness of Republic Act 10627 on the act of Bullying, adaptation of Republic Act 10627 policies, mechanism to address bullying are 2.42, 2.32, 2.26, while the three others reporting requirements, sanction for non-compliance, implementing rules and regulation are 2.17, 2.24, 2.25, while the separability clause and repealing clause are both 2.26 and the effectivity is 2.07. The parents and barangay officials are "Aware" on the Republic Act 10627.

The difference between Parents and Barangay Officials in their Extent of Awareness on the Republic Act 10627 - The study revealed that the computed p-value for the Awareness of Republic Act 10627 has a significant level of 0.005 in Separability Clause. Those statement are higher than the 0.05 level of significance, therefore, the separability clause reject the null hypothesis. Those statement are higher than the 0.05 level of significance, therefore, there's reject the null hypothesis and no significant difference of parents and barangay officials of awareness on Republic Act 10627.

Based on the findings of the study, the assessment of the respondents in Awareness on the Republic Act 10627 interpreted as aware on policies of Republic Act 10627 on their communities. Therefore, the awareness of bullying is aware or existing on barangay officials and parents.

On the difference between parents and barangay officials in the extent of awareness on the Republic Act 10627, the researchers conclude that the parents and barangay officials both know and aware about the policies of bullying.

From the results, the parents may talk to their children if they show certain behaviors that irritates or provoke others, in this case, they may help them to find ways to interact with friends and peer groups. The barangay official may use/post some visuals or information about RA 10627 otherwise known as Republic Act 10627 in in the Barangay, so community will be able to understand more about bullying. The barangay 409 may conduct an activity like family day and values formation which will include fun and athletic event. This would encourage the family to spend quality time together. It may help the child to interact with other and show positive behavior.

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PERSONALITY DEVELOPMENT AND HUMAN RELATION OF BSOA OM STUDENTS: BASIS FOR PERSONALITY DEVELOPMENT PROGRAM

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INTRODUCTION

Personality development is the development of the organized pattern of behavior and attitudes that makes a person distinctive. Personality development occurs by the ongoing interaction of temperament, character and environment. Personality is what makes a person unique, and it is recognizable soon after birth. A child's personality has several components: Temperament, Environment, and Character. Temperament is the set of genetically traits that determined the child approach to the world and how the child learns about the world. Specific environment influence the development of a person's personality the most. Temperament with its dependence on genetic factors is sometimes referred to us "nature" while the other factors are called "nurture".

Another component of personality is charactering the set of emotional, cognitive, and behavioral patterns learned from experiences that determines how a person thinks, feels, and behaves. A person character continues to evolve throughout life, although much depends on inborn traits and nearly experiences. Character is also dependent on a person moral development. Personality Development essentially means enhancing and grooming one's outer and inner self to bring about a positive change to one's life. Each individual has distinct persona that can be developed, polished and refined. This process includes boosting one's confidence, improving communication and language speaking abilities, widening one's scope of knowledge developing certain hobbies or skills, learning fine etiquettes and manners, adding style and grace to the Ways one looks, talks, and walks and overall in believing oneself with positivity, liveliness, and peace.

Personality development is gaining importance because it enables people to create a good impression about themselves on others. It helps them to build and develop relationships, career growth and also to improve one.

Personality development is nothing but a tool that helps a person realize how capabilities and your strengths making him a stronger, happier and cheerful person.

MATERIALS AND METHODS

The method used is descriptive method in assessing the personality development and human relation program. This study involves analysis of the personality and human relation practices of BSOA-OM Students. Researcher made survey questionnaire was use in this study. This study used CHI-SQUARE Frequency, Percentage and Weighted Mean in statistical treatment.

RESULTS AND DISCUSSIONS

1.　　　Demographic profile of the respondents in terms of:

Table 1
Distribution of Respondents According to Age

Age	Frequency	Percent
18 – 20	46	46
21 – 23	50	50
24 and above	4	4
Total	**100**	**100**

Table 1 shows respondents profile in terms of age: it shows that majority of the respondents age is 21-23 with a frequency of 50 or 50 percent of the total population. It is followed with the age of 18-20 with a frequency of 46 or 46 percent of the total population. Lastly are ages 24 above with frequency of 4 or 4 percent of the total population.

Table 2
Distribution of Respondents According to Gender

Gender	Frequency	Percent
Male	30	30
Female	70	70
Total	**100**	**100**

Table 2 shows the respondents profile in terms of gender: it shows that majority of the respondent's gender is female 70 or 70 percent of the total population. Lastly, are males obtain a frequency of 30 or 30 percent of the population.

Table 3
Distribution of Respondents According to Civil Status

Civil Status	Frequency	Percent
Single	98	98
Married	2	2
Total	**100**	**100**

Table 3 presents the respondents profile in terms of civil status, it shows that majority of the respondent's status is single with 98 percent of the total population. Lastly are married with 2 or 2 percent of the population.

Table 4
Distribution of Respondents According to Year Level

Year Level	Frequency	Percent
Second Year	30	30
Third Year	40	40
Fourth Year	30	30
Total	**100**	**100**

Table 4 show the respondents profile in terms of year level, it shows that majority of the respondents are in third year level with 40 or 40 percent of the total population. Lastly, second year and fourth year order obtained 30 respondents equally comprising 30 percent of the total population.

2.   How do the respondents assess their personality and human relation in terms of:

Table 5
Distribution of Respondents According to Good Grooming

Good Grooming	Mean	Verbal Interpretation
1. I am particular with my proper hygiene (regular bath, toothbrush, deodorant and nail care)	4.82	Always Practiced
2. I am particular with my proper hair cut (male), Hair care (female) to look presentable at all time	4.55	Always Practiced
3. I am particular with my proper changing of daily clothes (shirts, pants and underwear)	4.73	Always Practiced
4. I am particular with myEveryday use of make up or cosmetics product to enhance my appearance	4.10	Often Practiced
Weighted Mean	**4.55**	**Always Practiced**

Table 5 shows that the assessment of personality development and human relation as to Good grooming of BSOA students, I am particular with my proper hygiene , with the weighted mean 4.82 with the verbal interpretation of "always practiced", I am particular with my proper haircut, with the weighted mean of 4.55 with the verbal interpretation of "always practice", I am particular with my proper changing of clothes with the weighted mean 4.73 with the verbal interpretation of "always practiced" I am particular with my everyday use of make up with the weighted mean of 4.10 with the verbal interpretation of "always practiced" the students are fully aware of their good grooming in terms of personality development and human relation. It get an overall rating of 4.55 which means "Always Practice".

Table 6
Distribution of Respondents According to Manners

Manners	Mean	Verbal Interpretation
1. I am courteous and I say thank you expressively	3.98	Often Practiced
2. I respect and care to help others	3.90	Often Practiced
3. I observe proper manners in public places gatherings, and special occasion at all time	3.92	Often Practiced
4. I observe proper etiquette (table manners telephone etiquette)	3.37	Sometimes Practiced
Weighted Mean	**3.79**	**Often Practiced**

Table 6 shows that the assessment of personality development and human relation as to Manners of BSOA students, I am courteous and I say thank you expressively , with the weighted mean 3.98 with the verbal interpretation of "often practiced", I respect and care to help others, with the weighted mean of 3.90 with the verbal interpretation of "often practice", I observe proper manners in public places, gatherings and special occasion at all time with the weighted mean 3.92 with the verbal interpretation of "often practiced" I observe proper etiquette with the weighted mean of 3.37 with the verbal interpretation of "often practiced" the students

are aware of their manners to be important. Manners got an overall mean of 3.79 which is interpreted as "Often Practiced"

Table 7
Distribution of Respondents According to Health and Posture

Health and Posture	Mean	Verbal Interpretation
1. I religiously do daily exercise	2.89	Sometimes Practiced
2. I eat balanced diet	2.75	Sometimes Practiced
3. I have 8 hours of sleep	2.93	Sometimes Practiced
4. I am particular with my correct posture	3.00	Sometimes Practiced
Weighted Mean	**2.89**	**Sometimes Practiced**

It is shown in Table 7 that the assessment of personality development and human relation as to Health and Posture of BSOA students, I religiously do daily exercise, with the weighted mean 2.89 with the verbal interpretation of "sometimes practiced", I eat balanced diet, with the weighted mean of 2.75 with the verbal interpretation of "sometimes practiced", I have 8 hours of sleep with the weighted mean 2.93 with the verbal interpretation of "sometimes practiced" I am particular with my correct posture with the weighted mean of 3.00 with the verbal interpretation of "sometimes practiced" the students rated their health and posture with a weighted mean of 2.89 on "Sometimes Practiced"

Table 8
Distribution of Respondents According to Proper Dress Code

Proper Dess Code	Mean	Verbal Interpretation
1. I practice wearing appropriate attire in a particular occasion	3.92	Often Practiced
2. I practice proper wearing of school uniform	4.33	Always Practiced
3. I know how to accessorize depending on fashion and occasion	3.58	Often Practiced
4. I am aware of trends and fashion but care to dress comfortably	3.64	Often Practiced
Weighted Mean	**3.61**	**Often Practiced**

As shown in table 8 that the assessment of personality and human relation as to proper dress code of BSOA students are as follows. I practice proper wearing of appropriate attire in particular occasion with the weighted mean 3.92 with the verbal interpretation of "often practiced" I practiced proper wearing of school uniform with the weighted mean 4.33 with the verbal interpretation of "always practiced", I know how to accessorize depending on fashion and occasion with the weighted mean 3.58 with the verbal interpretation of "often practiced" I am aware of trends and fashion but care to dress comfortably with the weighted mean of 3.64 with the verbal interpretation of "often practiced" with the overall mean 3.87"Often Practised" the students are often practiced their proper dress code assess in personality development and human relation.

Table 9
Distribution of Respondents According to Human Relation

Human Relation	Mean	Verbal Interpretation
1. I recognize human Dignity, worth of every individual differences	4.09	Often Practiced
2. I observe my gesture and facial expression when talking to others	3.78	Often Practiced
3. I am aware of managing stress leading to have a peace of mind (recognize the anger of others, listening, and forget and forgive others)	3.64	Often Practiced
4. I care to keep promises	3.72	Often Practiced
Weighted Mean	**3.81**	**Often Practiced**

Table 9 shows that the assessment of personality development and human relation as to Human relation of BSOA students, I recognize human dignity worth of every individual differences, with the weighted mean 4.09 with the verbal interpretation of "often practiced", I observe my gesture and facial expression when talking to others, with the weighted mean of 3.78 with the verbal interpretation of "often practiced", I am aware of managing stress leading to have a peace of mind with the weighted mean 3.64 with the verbal interpretation of "often practiced" I care to keep promises with the weighted mean of 3.72 with the verbal interpretation of "often practiced" with the overall mean of 3.81 "often practiced"

Table 10
Computed x^2 in Age vs. Good Grooming

Criteria	X	df	P-value	Decision	Interpretation
Age vs Good Grooming	1.127	2	0.569	Accept	Not Significant
Age vs Manners	11.82	8	0.15	Accept	Not Significant
Age vs Health and Posture	6.268	6	0.39	Accept	Not Significant
Age vs Proper Dress Code	3.099	4	0.54	Accept	Not Significant
Age vs Human Relation	3.915	6	0.31	Reject	Significant
Gender vs Good Grooming	0.42	1	0.51	Accept	Not Significant
Gender vs Manners	2.085	4	0.72	Accept	Not Significant
Gender vs Health and Posture	0.475	3	0.924	Accept	Not Significant
Gender vs Proper Dress Code	2.646	2	0.266	Accept	Not Significant
Gender vs Human Relation	2.5	3	0.47	Accept	Not Significant

Table 10 shows computed x^2 in age vs. good grooming is 1.127 P-Value of 0.569 and gender vs. proper dress code is 2.646 P-Value of 0.266 with 2 degree of freedom and tabular value f 5.991, gender vs human relation is 2.500 P-Value of 0.45, and gender vs health and posture is 0.475 P-Value of0.94 with 3 degrees of freedom and tabular value of 7.815, age vs proper dress code is 3.099 P-Value of 0.541 and gender vs manners is 2.085 P-Value of 0.72 with 4 degrees of freedom and tabular value of 9.488 age vs health and postures is 6.268 P-Value of 0.394 with 6 degrees of freedom and tabular value of 12.592 gender vs good grooming is 0.429 P-Value of 0.513 with 1 degree of freedom and tabular of value of 3.841, age vs manners is 11.82 with the P-Value of 0.159 with 8 degrees of freedom and tabular value of 15.507 are less than the tabular value at 0.05 level of significance with degree of freedom, Therefore the null hypothesis is accepted. This means that there is no significant relationship between the demographic profile of the students and their personality development and human relation.

Age vs human relation is 13.915 P-Value of 0.31 with 6 degrees of freedom and tabular value of 12.592 is greater that the tabular value of 12.592 at 0.05 level of significance with 6 degree of freedom therefore the null hypothesis is rejected. This means that there is significant relationship between demographic profile of the students and their personality development and human relation.

Table 11
Computed x^2 in Civil Status vs. Proper Dess Code

Criteria	X	df	P-value	Decision	Interpretation
Civil Status vs Good Grooming	0.304	1	0.581	Accept	Not Significant
Civil Status vs Manners	1.55	4	0.818	Accept	Not Significant
Civil Status vs Health and Posture	2.301	3	0.512	Accept	Not Significant
Civil Status vs Proper Dress Code	1.591	2	0.451	Accept	Not Significant
Civil Status vs Human Relation	2.225	3	0.527	Accept	Not Significant
Year Level vs Good Grooming	7.131	2	0.028	Reject	Significant
Year Level vs Manners	30.126	8	0.0	Reject	Significant
Year Level vs Health and Posture	7.231	6	0.3	Accept	Not Significant
Year Level vs Proper Dress Code	8.772	4	0.067	Accept	Not Significant
Year Level vs Human Relation	7.061	6	0.009	Accept	Not Significant

Table 11 Shows that the computed x^2 in civil status vs proper dress code is 1.591 P-value of 0.451 with 2 degrees of freedom and tabular value of 5.991 civil status vs health and posture is 2.301 P-value of 0.512 and civil status vs human relation is 2.225 P-value of 0.527 with 3 degrees of freedom and tabular value of 7.815, civil status vs manners is 1.55 P-value of 0.818 and year level vs proper dress code is 8.772 P-value of 0.077 with 4 degrees of freedom and tabular value of 9.488, year level vs health and posture is 7.231 P-value of 0.3 with 6 degrees of freedom and tabular value of 12.592, civil status vs good grooming is 0.304 P-value of 0.581 1 degree of freedom and tabular value of 3.841 are less than the tabular value at 0.05 level of significance with degrees of freedom therefore the null hypothesis is accepted. This is means that there is no significantly relationship between the demographic profile of the students and their personality development and human relation.

Year level vs good grooming is 7.131 P-Value of 0.028 with 2 degrees of freedom and tabular value of 5.991, year level vs human relation is 17.061 P-value of 0.09 6 degrees of freedom and tabular value of 12.592, Year level vs manners is 31.126 P-value of 0.00 with 8 degrees of freedom and tabular of value of 15.507 at 0.05 level of significance. Therefore, the null hypothesis is rejected. This means that there is significant relationship between the demographic profile of students and their personality development and human relation.

CONCLUSIONS

Based on the findings the following conclusion were drawn, most of the respondents in terms of age are in 21-23 years old, in terms of gender most of the respondents are female, most of the respondents are single in terms of their civil status, and in terms of year level most of the respondents are from the third year students. The respondents assessed to themselves, the respondents always practiced good grooming, often practiced manners, sometimes practiced health and posture, often practiced proper dress code and often practiced human relation. There is no significant relationship between age and student personality and human relation except on proper dress code and human relation. There is no significant relationship between student personality and human relationship to gender and civil status. While there is significant relationship between student personality and human relation to student's year level except on health, posture and proper dress code.

RECOMMENDATIONS

Based on the findings and conclusions the students should know the importance of personal hygiene to avoid the spread of common illnesses and the teacher should be the one who will provide knowledge about the personal hygiene. Provide a pleasant environment for the student to 00learn good manners and right conduct. Let them see all the good things at home and the teachers will not have a hard time teaching them and molding them to be well-mannered people. Regular physical activity and proper diet can also prevent or manage a wide range of health problem. Combined with physical activity, diet can help one to maintain healthy weight that promotes your health. Students must adhere to the following guidelines in school and at school-sponsored events. Students violating the dress code will be required to change their clothes to meet the school expectations. Failure to do so will result in disciplinary action. Allow the students to participate in family activities where they could learn how to have good human relation and right conduct. One way of doing this is to always have other people at home to entertain.

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BACHELOR OF SCIENCE IN HOSPITALITY MANAGEMENT GRADUATES, SCHOOL YEAR 2017 TO 2020: A TRACER STUDY

Margie R. Atizardo, Ed.D.

INTRODUCTION

Higher Education Institutions like EARIST offering Hospitality Management programs are important enablers helping to develop the next generation of hoteliers not only in the Philippines but other countires, as well. The Bachelor of Science in Hospitality Management is one of the popular courses nowadays due to the increased number of hospitality industries. According to previous studies conducted, there were high demands for hospitality and tourism practitioners where graduates can have employment articulated with their major field of specialization. In order to meet this objective, educational institutions may include in their curriculum especially major subjects specific attributes and competencies the hospitality industry require in order to keep pace with technological advancements. Aligning graduate outcomes with specific industry requirements reflect positively on the quality of instruction and training from education providers which also enhance graduates' employability in their chosen careers.

Graduate Tracer Study is an important tool for colleges and universities in maintaining curriculum relevance and providing targetted benefits to graduates and likewise enhance the marketability of educational programs like Bachelor of Science in Hospitality Management. Through the GTS, schools may be informed of their success which is often measured by the employment outcomes of their graduates. Focusing on the employability of graduates, they will maintain a competitive advantage in the global market. Though graduates of hospitality management courses are facing an increasingly competitive and unstable employment market, it is critical that they should be equipped with appropriate performance competencies. Students should carefully consider their career plans in order to comply with the demands of the hospitality industry's competitive environment despite this pandemic. Although hospitality educators have begun to focus on bridging the gap between the skills of hospitality graduates and the industry requirements and expectations, few studies conducted dealt with attributes for the overall employability of graduates from the perspectives of senior students and managers. Eulogio "Amang" Rodriguez Institute of Science and Technology, being one of the state colleges in the urban city is flooded with enrollees coming from different parts of the region and the whole country, as well. The school has greater chances of admitting and enrolling the most qualified students that would later produce highly competitive graduates who are comparable with leading institutions offering the same program.

With these, the researcher was inspired to conduct the study to assess the employability of the BSHM graduates from SY 2017 to 2020 to gather information about the educational background, advanced training, and employment data and later used as inputs to improve the curriculum to further enhance graduates' competences. The pandemic has confronted the hospitality industry with an unprecedented challenge and EARIST which is oftentimes flooded with enrollees has to address the said challenge to effectively provide quality education and training despite utilizing synchronous and asynchronous mode of instruction.

METHODOLOGY

This study utilized the descriptive method of research. Descriptive research because it aims to accurately and systematically describe a population, situation, or phenomenon. It can answer what, where, when, and how questions, but not why. This method is often used by psychological, social, and market researchers to understand how people act in a real-life situation (McCombes, 2019). This methodology aims to describe a population, situation, or phenomenon accurately and systematically. It can answer what, where, when, and how questions, but not why questions. A descriptive research design can use a wide variety of research methods to investigate one or more variables. The research design was appropriate in this study to determine the employability of graduates of Bachelor of Science in Hospitality Management, from SY 2017 to 2020. The respondents of the study were 50 composed of 14 respondents from S.Y. 2017-2018, 21 from S.Y. 2018-2019, and 15 from S.Y. 2019-2020.

Purposive sampling was utilized in the selection of respondents needed in the study. Purposive because the sampling of primary studies for inclusion in the synthesis is one way of achieving a manageable amount of data. The objective is to describe the development and application of a sampling framework for qualitative evidence synthesis. (BMC Med Res Methodology,2019)

RESULTS AND DISCUSSION

Sub-problem No. 1: What is the employability status of the Bachelor of Science in Hospitality Management Graduates?

1.1   *Reasons for Pursuing Degree*

Table 1
Employability Status as to Reason for Pursuing Degree

Indicators	2018		2019		2020		Total		Rank
	f	%	f	%	f	%	f	%	
1. High grades in the course or subject area(s).	3	21.43	6	28.57	2	13.33	11	22	1
2. Good grades in high school.	3	21.43	3	14.29	4	26.67	10	20	2
3. Influence of parents or relatives	1	7.14	2	9.52	3	20	6	12	5
4. Peer influence	2	14.29	1	4.76	1	6.67	3	6	7
5. Prospect of career advancement.	1	7.14	3	14.29	2	13.33	7	14	4
6. Prospect of attractive compensation.	1	7.14	5	23.81	2	13.33	8	16	3
7. Strong passion for the profession.	3	21.43	1	4.76	1	6.67	5	10	6
Total	**14**	**100**	**21**	**100**	**15**	**100**	**50**	**100**	

As presented in Table 1, the Employability Status as to Reason for Pursuing Degree, for Batch 2018 as to High grades in the course or subject area(s), Good grades in high school, Strong passion for the profession, all three indicators got 3 or 21.43 percent; Peer influence got 2 or 14.29 percent; Influence of parents or relative, Prospect of career advancement., and Prospect of attractive compensation, all indicators got 1 or 7.14 percent.

On the other hand, for Batch 2019 as to High grades in the course or subject area(s)got 6 or 28.57 percent; Prospect of attractive compensation got 5 or 23.81 percent; Good grades in high school, and Prospect of career advancement, all got 3 or 14.29, and lastly, both Peer influence and Strong passion for the profession, got 1 or 4.76, respectively.

As a whole, the employability status as to pursuing the degree are: High grades in the course or subject area(s) with 11 or 22 percent as rank 1; Good grades in high school with 10 or 20 percent as rank 2; Prospect of attractive compensation with 8 or 16 percent as rank 3; Prospect of career advancement with 7 or 14 percent as rank 4; Influence of parents or relative with 6 or 12 percent as rank 5; Strong passion for the profession with 5 or 10 percent as rank 6; and Peer influence with 3 or 6 percent as rank 7.

1.2 Reason for Pursuing Advanced Studies

Table 2
Employability Status as to Reason for Pursuing Advanced Studies

Indicators	2018		2019		2020		Total		Rank
	f	%	f	%	f	%	f	%	
1. For promotion	1	7.14	1	4.76			2	4	3
2. For professional development	10	71.43	17	80.95	14	93.33	41	82	1
3. Personal fulfillment	1	7.14	3	14.29	1	6.67	5	10	2
Total	14	100	21	100	15	100	50	100	

As reflected in Table 2, the employability status as to the reason for pursuing advance studies for Batch 2018 on for professional development got 10 or 71.43 percent; while both for promotion and personal fulfillment got 1 or 7.14 percent.

For Batch 2019 as to for professional development got 17 or 80.95 percent; Personal fulfillment got 3 or 14.29 percent, and for promotion got 1 or 4.76.

Likewise, Batch 2020 as to for professional development got 14 or 93.33 percent; other got 1 or 6.67 percent.

As a whole, the reasons for advanced studies are: 41 or 82 percent are for professional development as rank 1; 5 or 10 percent are Personal fulfillment as rank 2, and 2 or 4 percent are for promotion as rank 3.

1.3 Employment Data

Table 3
Employability Status as to Employment Data

Indicators	2018		2019		2020		Total	
	f	%	f	%	f	%	f	%
1. Employed	14	100	21	100	15	100	50	100
Total	14	100	21	100	15	100	50	100

As displayed in Table 3, the employability status as to employment data for Batch 2018 as to indicator on Employed got 14 or 100 percent; Batch 2019 got 21 or 100 percent and lastly, Batch 2020 got 15 or 100 percent, respectively.

Generally, the respondents of the three batches are all employed with a frequency of 15 or 100 percent.

1.4   Present Employment Status

Table 4
Employability Status as to Present Employment Status

Indicators	2018		2019		2020		Total		Rank
	f	%	f	%	f	%	f	%	
1. Regular or permanent	9	64.29	15	71.43	14	93.33	38	76	1
2. Temporary	3	21.43	2	9.52			5	10	2
3. Casual			3	14.29			3	6	4
4. Contractual	2	14.29	1	4.76	1	6.67	4	8	3
Total	**14**	**100**	**21**	**100**	**15**	**100**	**50**	**100**	

Table 4 manifests the employability status as to present employment status. For Batch 2018, regular or permanent got 9 or 64.29 percent; temporary got 3 or 21.43 percent; and lastly, contractual got 2 or 14.29 percent.

As to Batch 2019, regular or permanent got 15 or 71.43 percent; Casual got 3 or 14.29 percent; temporary got 2 or 9.52 percent while contractual got 1 or 4.76 percent.
On the other hand, for Batch 2020 on regular or permanent got 14 or 93.33 percent while contractual got 1 or 6.67 percent.

Summarily, majority of the respondents with 38 or 76 percent are: regular or permanent as rank 1; 5 or 10 percent are temporary as rank 2; 4 or 8 percent are contractual as rank 3, and 3 or 6 percent are casual as rank 4.

Table 5
Employability Status as to Present Occupation

Indicators	2018		2019		2020		Total		Rank
	f	%	f	%	f	%	f	%	
1. Barista/Bartender	1	7.14			1	6.67	2	4	4.5
2. Housekeeper	3	21.43	1	4.76	1	6.67	5	10	2
3. Chef/Kitchen Staff	1	7.14			1	6.67	1	2	6.5
4. Receptionist			1	4.76			2	4	4.5
5. Manage			1	4.76			1	2	6.5
6. Utility Worker			3	14.29	1	6.67	4	8	3
7. Waiter	7	50	15	71.43	11	73.33	33	66	1
Total	**14**	**100**	**21**	**100**	**15**	**100**	**50**	**100**	

As depicted in Table 5, the employability status as to present occupation for Batch 2018 as to Waiter got 7 or 7 or 50 percent; Housekeeper got 3 or 21.43 percent; and lastly, both Chef/Kitchen Staff and Barista/Bartender got 1 or 7.14 percent, respectively.

As to Batch 2019, Waiter got 15 or 71.43 percent; Utility worker got 3 or 14.29 percent; and all indicators on Housekeeper, Receptionist and Manager got 1 or 4.76 percent.

Lastly, for Batch 2020, Waiter got 11 or 73.33 percent while all other indicators got 1 or 6.67 percent.

As a whole, the employability status as to present occupation are: waiter with 33 or 66 percent as rank 1; housekeeper with 5 or 10 percent as rank 2; utility worker with 4 or 8 percent as rank 3; barista/ bartender and receptionist with 2 or 4 percent as rank 4.5; and both chef/ kitchen staff and manager with 1 or 2 percent as rank 6.5.

Table 6
Employability Status as to Industry Currently Connected With

Indicators	2018		2019		2020		Total		Rank
	f	%	f	%	f	%	f	%	
1. Hotel and Restaurant	7	50	10	47.62	7	46.67	24	48	1
2. Travel Agency	1	7.14	4	19.05			5	10	3.5
3. Cruise			1	4.76			1	2	6
4. Tourist Office			1	4.76	1	6.67	2	4	5
5. Transport Storage and Communication	3	21.43	3	14.29	7	46.67	13	26	2
6. Catering	3	21.43	2	9.52			5	10	3.5
Total	**14**	**100**	**21**	**100**	**15**	**100**	**50**	**100**	

As shown in Table 6, the employability status as to industry currently connected with for Batch 2018 as to Hotel and Restaurant got 7 or 50 percent; both Transport Storage and Communication and Catering got 3 or 21.43 percent, and Travel Agency got 1 or 7.14 percent.

Similarly, for Batch 2019 as to Hotel and Restaurant got 10 or 47.62 percent; Travel Agency got 4 or 19.05 percent; Transport Storage and Communication got 3 or 14. 29 percent; Catering got 2 or 9.52 percent, and both Tourist Office and Cruise got 1 or 4.76 percent.

As to Batch 2020, both Hotel and Restaurant and Transport Storage and Communication got 7 or 46.67, and Tourist Office got 1 or 6.67 percent.

In general, the employability status as to industry currently connected with are: Hotel and Restaurant with 24 or 48 percent as rank 1; Transport Storage and Communication with 13 or 26 percent as rank 2; Travel Agency and Catering with 5 or 10 percent as rank 3.5; Tourist Office with 2 or 4 percent as rank 5; and Cruise with 1 or 2 percent as rank 6.

Table 7
Employability Status as to Place of Work

Indicators	2018		2019		2020		Total		Rank
	f	%	f	%	f	%	f	%	
1. Local	2	14.29	12	57.14	10	66.67	24	48	2
2. Abroad	12	85.71	9	42.86	5	33.33	26	52	1
Total	**14**	**100**	**21**	**100**	**15**	**100**	**50**	**100**	

As manifested in Table 7, the employability status as to the place of work for Batch 2018 as Abroad got 12 or 85.71 percent while Local got 2 or 14.29 percent.

As to Batch 2019 as to place of work on Local got 12 or 57.14 percent and Abroad got 9 or 42.86 percent.

As to Batch 2020, local got 10 or 66.67 percent while Abroad got 5 or 33.33 percent.

As a whole, the employability status as to industry currently connected with are: Abroad with 26 or 52 percent as rank 1 while Local with 24 or 48 percent as rank 2.

Table 8
Employability Status as to First Job after College

Indicators	2018		2019		2020		Total		Rank
	f	%	f	%	f	%	f	%	
1. Yes	2	14.29	12	57.14	10	66.67	24	2	2
2. No	12	85.71	9	42.86	5	33.33	26	12	1
Total	**14**	**100**	**21**	**100**	**15**	**100**	**50**	**100**	

As revealed in Table 8, the employability status as to the first job after college for Batch 2018 as to No got 12 or 85.71 percent while Yes got 2 or 14.29 percent.

For Batch 2019, Yes got 12 or 57.14 while No got 9 or 42.86 percent.

Similarly, for Batch 2020 on Yes got 10 or 66.67 percent while No got 5 or 33.33 percent.

As a whole, the employability status as to the first job after college are: No got 26 or 52 percent as rank 1 while Yes got 24 or 48 percent as rank 2.

Table 9
Employability Status as to Reason for Staying on the Job

Indicators	2018		2019		2020		Total		Rank
	f	%	f	%	f	%	f	%	
1. Salaries and benefits	4	28.57	2	9.52	2	13.33	8	16	4
2. Career challenge	3	21.43	4	19.05	4	26.67	11	22	2
3. Related to Special Skills	2	14.29	3	14.29	5	33.33	10	20	3
4. Related to course or program of study	4	28.57	7	33.33	2	13.33	13	26	1
5. Proximity to residence			2	9.52	1	6.67	3	6	5.5
6. Peer Influence	1	7.14	1	4.76	1	6.67	3	6	5.5
7. Others			2	9.52			2	4	7
Total	**14**	**100**	**21**	**100**	**15**	**100**	**50**	**100**	

As presented in Table 9, the employability status as to the reason for staying on the job for Batch 2018, both Salaries and benefits and Related to course or program of study got 4 or 28.57 percent; Career challenge got 3 or 21.43 percent; Related to special skills got 2 or 14.29 percent and peer influence got 1 or 7.14.

For Batch 2019, Related to course or program of study got 7 or 33.33 percent; Career challenge got 4 or 19.05 percent; Related to special skills got 3 or 14.29 percent; and lastly, three indicators on Salaries and benefits; Proximity to residence; Others got 2 or 9.52 percent.

Generally, the employability status as to the reason for staying on the job are: related to the course or program of study with 13 or 6 percent as rank 1; career challenge with 11 or 22 percent as rank 2; related to special skills with 10 or 20 percent as rank 3; salaries and benefits with 8 or 16 percent as rank 4; proximity to residence and peer influence with 3 or 6 percent as rank 5.5; and others with 2 or 4 percent as rank 7.

Table 10
Employability Status as to First Job Related to the Course

Indicators	2018		2019		2020		Total		Rank
	f	%	f	%	f	%	f	%	
1. Yes	7	50	16	76.19	10	66.67	33	66	1
2. No	7	50	5	23.81	5	33.33	17	34	2
Total	14	100	21	100	15	100	50	100	

As reflected in Table 10, the employability status as to the first job related to the course for Batch 2018, both Yes and No got 7 or 50 percent; Batch 2019 as to Yes got 16 or 76.19 while No got 5 23.81 percent; and lastly, for Batch 2020 as Yes got 10 or 66.67 percent while No got 5 or 33.33 percent.

As a whole, the employability status as to the first job related to the course are: 33 or 66 are Yes as rank 1 while 17 or 34 percent are No as rank 2.

Table 11
Employability Status as to Reason for Accepting Job

Indicators	2018		2019		2020		Total		Rank
	f	%	f	%	f	%	f	%	
1. Salaries and benefits	5	35.71	5	23.81	6	40	16	32	1
2. Career challenge	3	21.43	7	33.33	5	33.33	15	30	2
3. Related to Special Skills	3	21.43	4	19.05	2	13.33	9	18	3
4. Proximity to residence	2	14.29	2	9.52	2	13.33	6	12	4
5. Work Hours	1	7.14	3	14.29			4	8	5
Total	14	100	21	100	15	100	50	100	

As depicted in Table 11, the employability status as to the reason for accepting job for Batch 2018 as to Salaries and benefits got 5 or 35.71 percent; both Career challenge and Related to Special Skills got 3 or 21.43 percent; Proximity to residence got 2 or 14.29 percent, and Work hoursgot 1 or 7.14 percent.

As to Batch 2019, Career challenge got 7 or 33.33 percent; Salaries and benefits got 5 or 23.81 percent; Related to Special Skills got 4 or 19.05 percent; Work hours got 3 or 14.29 percent, and Proximity to residence got 2 or 9.52 percent.

For Batch 2020, Salaries and benefits got 6 or 40 percent; Career challenge got 5 or 33.33 percent; and both Related to Special Skills and Proximity to residence got 2 or 13.33 percent.

Generally, the employability status as to the reason for accepting job are: salaries and benefits with 16 or 32 percent as rank 1; career challenge with 15 or 30 percent as rank 2; related to special skills with 9 or 18 percent as rank 3; proximity to residence with 6 or 12 percent as rank 4; and Work hours with 4 or 8 percent as rank 5.

Table 12
Employability Status as to Reason for Changing Job

Indicators	2018		2019		2020		Total		Rank
	f	%	f	%	f	%	f	%	
1.　Salaries and benefits	4	28.57	6	28.57	2	13.33	12	24	2
2.　Career challenge	3	21.43	6	28.57	8	53.33	17	34	1
3.　Related to Special Skills	3	21.43	4	19.05	2	13.33	9	18	3
4.　Proximity to residence	2	14.29	3	14.29	3	20	8	16	4
5.　Work Hours	2	14.29	2	9.52			4	8	5
Total	**14**	**100**	**21**	**100**	**15**	**100**	**50**	**100**	

As portrayed in Table 12, the employability status as to the reason for changing job for Batch 2018 as to Salaries and benefits got 4 or 28.57 percent; both Career challenge and Related to Special Skills got 3 or 21.43 percent, and both Proximity to residence and Perssonal got 3 or 14.29 percent.

As to Batch 2019, both Salaries and benefits and Career challenges got 6 or 28.57 percent; Related to Special Skills got 4 or 19.05 percent; Proximity to residence got 4 or 19.05 percent, and Personal got 2 or 9.52 percent.

On the other hand, Career challenge got 8 or 53.33 percent; Proximity to residence got 3 or 20 percent and Related to Special Skills got 2 or 13.33 percent.

Generally, the employability status as to the reason for changing job are: career challenge with 17 or 34 percent as rank 1; salaries and benefits with 12 or 24 percent as rank 2; related to special skills with 9 or 18 percent as rank 3; proximity to residence with 8 or 16 percent as rank 4; and personal with 4 or 8 percent as rank 5.

Table 13
Employability Status as to Length of Stay in First Job

Indicators	2018		2019		2020		Total		Rank
	f	%	f	%	f	%	f	%	
1.　3 years to less than 4 years	2	14.29	2	9.52	2	13.33	6	12	5
2.　2 years to less than 3 years	2	14.29	4	19.05	4	26.67	10	20	2
3.　1 year to less than 2 years	1	7.14	3	14.29	5	33.33	9	18	3
4.　7 to 11 months	1	7.14	5	23.81	2	13.33	8	16	4
5.　1 to 6 months	5	35.71	5	23.81	2	13.33	12	24	1
6.　Less than one month	3	21.43	2	9.52			5	10	6
Total	**14**	**100**	**21**	**100**	**15**	**100**	**50**	**100**	

As shown in Table 13, the employability status as to the length of stay in the first job for Batch 2018 as to 1 to 6 months got 5 or 35.71 percent; Less than one month got 3 or 21.43 percent; both 3 years to less than 4 years and 3 years to less than 4 years got 2 or 14.29 percent; both 1 year to less than 2 years and 7 to 11 months got 1 or 7.14 percent.

On the other hand, for Batch 2019 as to both 7 to 11 months and 1 to 6 months got 5 or 23.81; 2 years to less than 3 years got 4 or 19.05; 1 year to less than 2 years got 3 or 14.29; both 3 years to less than 4 years and Less than one month got 2 or 9.52 percent.

As to Batch 2020, 1 year to less than 2 years got 5 or 33.33; 2 years to less than 3 years got 4 or 26.67; all three indicators on 3 years to less than 4 years; 7 to 11 months; and 1 to 6 months got 2 or 13.33 percent.

As a whole, the employability status as to the length of stay in the first job are: 1 to 6 months with 12 or 24 percent as rank 1; 2 years to less than 3 years with 10 or 20 percent as rank 2; 1 year to less than 2 years with 9 or 18 percent as rank 3; 7 to 11 months with 8 or 16 percent as rank 4; 3 years to less than 4 years with 6 or 12 percent as rank 5; and less one month with 5 or 10 percent as rank 6.

Table 14
Employability Status as to Where They Find the First Job

Indicators	2018		2019		2020		Total		Rank
	f	%	f	%	f	%	f	%	
1. Response to an advertisement			3	14.29	7	46.67	10	20	2
2. As waln-in applicant	11	78.57	11	52.38	3	20	25	50	1
3. Recommended by someone	2	14.29	1	4.76	2	13.33	5	10	4
4. Information from friends	1	7.14	3	14.29	3	20	7	14	2
5. Job fair or employment service office (PESO)			1	4.76			1	2	6
6. Others			2	9.52			2	4	5
Total	**14**	**100**	**21**	**100**	**15**	**100**	**50**	**100**	

As identified in Table 14, the employability status as to find the first job for Batch 2018 as to walk-in applicant got 11 or 78.57 percent; Recommended by someone got 2 or 14.29 percent, and Information from friends got 1 or 7.14 percent.

As to Batch 2019, as to walk-in applicant got 11 or 52.38 percent; both Response to an advertisement and g Information from friends to 3 or 14.29 percent; Others got 2 or 9.52 percent; both Recommended by someone and Job fair or employment service office (PESO) got 1 or 4.76 percent.

Furthermore, as to Batch 2020 on Response to an advertisement got 7 or 46.67 percent; As walk-in applicant and Information from friends got 3 or 20 percent; and lastly, Recommended by someone got 2 or 13.33 percent.

As a whole, the employability status as to where they find the first job are as: As a walk-in applicant with 25 or 50 percent as rank 1; response to an advertisement with 10 or 20 percent as rank 2; information from friends with 7 or 14 percent as rank 3; recommended by someone with 5 or 10 percent as rank 4; others with 2 or 4 percent as rank 5; and job fair or employment service office with 1 or 2 percent as rank 6.

Table 15
Employability Status as to How Long They Find the First Job

Indicators	2018		2019		2020		Total		Rank
	f	%	f	%	f	%	f	%	
1. 2 years to less than 3 years			1	4.76			1	2	5
2. 1 year to less than 2 years	1	7.14	3	14.29	1	6.67	5	10	4
3. 7 to 11 months	2	14.29	3	14.29	1	6.67	6	12	3
4. 1 to 6 months	6	42.86	12	57.14	9	60	27	54	1
5. Less than one month	5	35.71	2	9.52	4	26.67	11	22	2
Total	**14**	**100**	**21**	**100**	**15**	**100**	**50**	**100**	

As depicted in Table 15, the employability status as to find in the first job for Batch 2018 as to Less than one month got 5 or 35.71 percent; 7 to 11 months got 2 or 14. 29; and 1 year to less than 2 years got 1 or 7.14 percent.

As to Batch 2019, 1 to 6 months got 12 or 57.14 percent; 1 year to less than 2 years and 7 to 11 months got 3 or 14.29 percent; Less than one month got 2 or 9.52 percent, and 2 years to less than 3 years got 1 or 4.76 percent.

Likewise, for Batch 2020 as 1 to 6 months got 9 or 60 percent; Less than one month got 4 or 26.67 percent; 1 year to less than 2 years and 7 to 11 months got 1 or 6.67 percent.

Generally, the employability status as to how long they find the first job are: 1 to 6 months with 27 or 54 percent as rank 1; less one month with 11 or 22 percent as rank 2; 7 to 11 months with 6 or 12 percent as rank 3; 1 year to less than 2 years with 5 to 10 percent as rank 4; and 2 years to less than 3 years with 1 or 2 percent rank 5.

Table 16
Employability Status as to Job Level

Indicators	2018		2019		2020		Total		Rank
	f	%	f	%	f	%	f	%	
1. Rank and file or clerical	5	35.71	12	57.14	5	33.33	22	44	1
2. Technical Supervisor	3	21.43	3	14.29	6	40	12	24	2
3. Management or executive	4	28.57	5	23.81	2	13.33	11	22	3
4. Entry Level works	2	14.29	1	4.76	2	13.33	5	10	4
Total	**14**	**100**	**21**	**100**	**15**	**100**	**50**	**100**	

As manifested in Table 16, the employment status as to job level for Batch 2018 as to Rank and file   or clerical got 5 or 35.71 percent; management or executive got 4 or 28.57 percent; Technical Supervisor got 3 or 21.43 percent, and entry level works got 2 or 14.29 percent.

For Batch 2019, Rank and file or clerical got 12 or 57.14 percent; management or executive got 5 or 23.81 percent; Technical Supervisor got 3 or 14.29 percent; and entry level works got 1 or 4.76 percent, respectively.

As to Batch 2020, Technical Supervisor got 4 or 40 percent; Rank and file or clerical got 5 or 33.33 percent, and both management or executive and entry level works got 2 or 13.33 percent.

Summarily, the employment status as to job level are: rank and file or clerical with 22 or 44 percent as rank 1; technical supervisor with 12 or 24 percent as rank 2; management or executive with 11 or 22 percent as rank 3; and entry level works with 5 or 10 percent as rank 4.

Table 17
***Employability Status as to Gross Monthly Earning in First* Job**

Indicators	2018		2019		2020		Total		Rank
	f	%	f	%	f	%	f	%	
1. P 25,000 and above	1	7.14	5	28.31	3	20	9	18	3
2. P 15,000 – 24,999	2	14.29	1	4.76	2	13.33	5	10	4
3. P 10,000 – 14,999	7	50	10	47.62	4	26.67	21	42	1
4. Less than P10,000	4	28.57	5	23.81	8	53.33	17	34	2
Total	14	100	21	100	15	100	50	100	

As identified in Table 17, the employment status as to gross monthly earning in first job for Batch 2018 as to P 10,000 – 14,999 got 7 or 50 percent; P 10,000 – 14,999 got 4 or 28.57 percent; P 15,000 – 24,999 got 2 or 14.29 percent; and P 25,000 above got 1 or 7.14 percent.

As to Batch 2019, P 10,000 – 14,999 got 10 or 47.62 percent; both P 25,000 above and Less than P10,000 got 5 or 23.81 percent;and P 15,000 – 24,999 got 1 or 4.76 percent.

Meanwhile, for Batch 2020 as to Less than P10,000 got 8 or 53.33 percent; P 10,000 – 14,999 got 4 or 26.67 percent; P 25,000 and above got 3 or 20 percent; and P 15,000 – 24,999 got 2 or 13.33 percent.

In general, the employment status as to gross monthly earning in the first job are: P 10,000 – 14,999 with 21 or 42 percent as rank 1; less than P10,000 with 17 or 34 percent as rank 2; P25,000 and above with 9 or 18 percent as rank 3; and 15,000 – 24,999 with 5 or 10 percent as rank 4.

Table 18
Employability Status as to College Curriculum Relevance to First Job

Indicators	2018		2019		2020		Total		Rank
	f	%	f	%	f	%	f	%	
1. Yes	12	85.71	18	85.71	10	66.67	40	80	1
2. No	2	14.29	3	14.29	5	33.33	10	20	2
Total	14	100	21	100	15	100	50	100	

As manifested in Table 18, the employability status as to college curriculum relevance to the first job for Batch 2018 Yes with 12 or 85.71 percent while No with 2 or 14.29 percent.

For Batch 2019 as to Yes with 18 or 85.71 percent while No with or 14.29 percent.

For Batch 2020, Yes has 10 or 66.67 percent while No with 5 or 33.33 percent.

Generally, the employability status of BSHM Graduates as to college curriculum relevance to first job are: 40 or 80 percent are Yes as rank 1 while 10 or 20 are No as rank 2.

Table 19
Employability Status as to Competencies Learned in College

Indicators	2018		2019		2020		Total		Rank
	f	%	f	%	f	%	f	%	
1. Communication Skills	5	35.71	5	23.81	2	13.33	12	24	1
2. Human Relation Skills	3	21.43	5	23.81	3	20	11	22	2
3. Entrepreneurial Skills	3	21.43	2	9.52	3	20	8	16	4
4. Problem Solving Skills	2	14.29	5	23.81	3	20	10	20	3
5. Critical Thinking Skills	1	7.14	4	19.05	2	13.33	7	14	5
6. Other Skills					2	13.33	2	4	6
Total	**14**	**100**	**21**	**100**	**15**	**100**	**50**	**100**	

As displayed in Table 19, the employment status as to competencies learned in college that are useful in the first job are: For Batch 2018 as to Communication Skills got 5 or 35.71 percent; both Human Relation Skills and Entrepreneurial Skills got 3 or 21.43 percent; Problem Solving Skills got 2 or 14.29 percent, and Critical Thinking Skills got 1 or 7.14 percent.

As to Batch 2019, the three indicators on Communication Skills, Human Relation Skills, and Problem Solving Skills got 5 or 23.81 percent; Critical Thinking Skills got 4 or 19.05 percent, and Entrepreneurial Skills got 2 or 9.52 percent.

On the other hand, for Batch 2020 as to the three indicators on Human Relation Skills, Entrepreneurial Skills, and Problem Solving Skills got 3 or 20 percent; while the three indicators such as Communication Skills, Critical Thinking Skills, and Other Skills likewise got 2 or 13.33 percent.

Generally, the employment status as to competencies learned in college that are useful in the first job are: communication skills with 12 or 24 percent as rank 1; human relation skills with 11 or 22 percent as rank 2; problem-solving skills with 10 or 20 percent as rank 3; entrepreneurial skills with 8 or 16 percent as rank 4; critical thinking skills with 7 or 14 percent as rank 5; and other skills with 2 or 4 percent as rank 6.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings, the following are the conclusions:

1.   The respondents' consideration in pursuing a college degree is having a noteworthy performance in the different subjects.

2.   Majority of the respondents choose to pursue advanced education for professional growth and career advancement.

3. Majority of the respondents are presently employed and regular in their employment.

From the conclusions, the following are the recommendations:

1.   The College of Hospitality and Tourism Management may continue conducting a Graduate Tracer every three years to know the employability status and whereabouts of the Bachelor of Science in Hospitality Management graduates of EARIST.

2. The College may invite industry partners and successful alumni to discuss how the school can improve the curriculum and delivery of instruction to keep pace with technological advancement and what the industry needs.

3. The College Administrators may upgrade the facilities and laboratories to ensure the preparedness for employment of graduates. Teachers are also encouraged to be updated on the knowledge and skills, as well as, the current trends in the hospitality industry to keep pace with the changing times.

4. The Alumni Coordinator of the College may consider creating a website for the Bachelor of Science in Hospitality Management for easier tracking of graduates.

5. A Placement Office under the Guidance Office may be considered to help BSHM graduates find jobs for employment which are articulated to their major field of specialization.

6. The College may regularly conduct a Career Guidance for graduating students to ensure they are properly informed as to their career choice.

8. A Feedback Mechanism may be considered especially for the On-the-Job Training of the BSHM which will serve as inputs for the college to review and update the curriclum in order to provide the knowledge and skills required for employment.

9. The College may consider reviewing the curriculum regularly, make revisions, if necessary, to ensure compliance with CHED's Policies and Standards.

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AN EVALUATION OF THE PREPAREDNESS OF THE EARIST FACULTY TOWARD VIRTUAL CLASSES

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INTRODUCTION

Digital education changes all components of teaching and learning in higher education. Several studies were conducted to scrutinize issues in delivering an online lesson. Still, only a few have made the aforementioned studies and provided a synopsis on issues in online education. Professors' matters involved shifting faculty roles, time management, teaching styles, and transitioning from face-to-face to online. Content issues had the part of lecturers in content development, integration of multimedia in content, the instructional strategies role in content development, and concerns for content development. To discourse these challenges in online education, higher education institutions need to offer professional development for professors, training for learners, and technical support for content development.

Today's type of teaching is blended learning, which is a mixture of face-to-face teaching and online activity was practiced and classified as synchronous learning. Synchronous is a type of class that happens on set schedules and time frames where both teacher and students meet online to deliberate the lesson and give the assignments and activity. The other category is modular or asynchronous learning, wherein the learners are the one who finishes their activities at their own pace and time.

Studying nowadays is done through the use of different online platforms such as google meet, gendo, zoom, google classroom, etc. It is costly on the part of the teachers and students. Some teachers are not accustomed to technology and are having some problems using the current setup that we have. Some are also not well-trained in the usage of different online software or applications. Being unaware of the technology used for classes may cause complications in the future; it may affect the teaching strategy and the professors' performance in conveying their lessons to the learners. Because of nonstop reports of high dropout rates and accomplishment problems in online courses, conducting such an analysis and providing the outcomes increasingly become critical to notify educators about considerations and alterations necessary for improving the quality of online lessons.

At present, the Eulogio "Amang" Rodriguez Institute of Science and Technology (EARIST) have adopted the online teaching method wherein a system for online class was already set-up for that purpose.

The aims of this study are to determine whether or not the EARIST faculty members are digitally prepared for the online class and to figure out the problems they have encountered thereto.

METHODOLOGY

The researchers used the descriptive qualitative and quantitative method, and used a stratified sampling procedure in defining the exact sample numbers to use. This sampling is used to confirm the samples selected are not from one section or group only and its outcome represents the target population, and   gathered information from the (18) eighteen faculty

members of EARIST-Manila by online survey through via goggle form, the data was been measured by statistical treatment of using percentage, frequency, and mean formula. It would be employed to gather information to present systematically all the essential information needed in the survey. The data gathered would be presented by the researchers and describe here all necessary information to materialize the objective. The guided questionnaire was used by the researchers as the main ingredient in collecting the needed information from the informants.

RESULT AND DISCUSSION

The actual number of respondents comes from the results using stratified sampling and the availability of the respondent.

Table 1
Informants of the Study

Respondents	f	%
Faculty Members	18	100.00
Total	**18**	**100.00**

As presented in Table 1, the selected respondents are the eighteen faculty members of EARIST.

The researchers gathered information from the (18) eighteen faculty members of EARIST-Manila.

Table 2
Respondents as to Age

Indicator	f	%
46 years old and above	10	56.00
41 - 45 years old	2	11.00
36 – 40 years old	2	11.00
31 – 35 years old	2	11.00
26 – 30 years old	2	11.00
Total	**18**	**100.00**

As reflected in Table 2, the distribution of respondents as to age are as follows: 10 or 56.00 percent are aged 46 years old and above; 8 or 44.00 percent are both aged 41 – 45 years old; 36-40 years old; 31 – 35 years old; and 26-30 years old.

Table 3
Respondents as to Gender

Indicator	f	%
Male	8	44.00
Female	8	44.00
Prefer not to specify	2	11.00
Total	**18**	**100.00**

As depicted in Table 3, the distributions of respondents as to gender are as follows: 8 or 44.00 percent are both male and female; and 2 or 11 percent are preferred not to specify.

Table 4
Respondents as to Civil Status

Indicator	f	%
Single	4	22.00
Married	14	78.00
Widow/er		
Legally Separated		
Total	**18**	**100.00**

As portrayed in Table 4, the distributions of respondents as to civil status are as follows: 14 or 78.00 percent are married; and 4 or 22.00 percent are single.

Table 5
Respondent as to Educational Attainment

Indicator	f	%
Doctorate Degree	6	33.00
Doctorate with units	10	56.00
Master's Degree	2	11.00
Total	**18**	**100.00**

As depicted in Table 5, the distributions of respondents as to educational attainment are as follows: 10 or 56.00 percent have earned doctorate units; 6 or 33.00 percent have doctorate degree; and 2 or 11.00 percent have master's degree.

Problem No. 1: What are the faculty members' assessments in the digital preparedness for the online class of EARIST faculty as to:

1.1   *Device Access;*

Table 6
Digital Preparedness for Online Class of Faculty Members
As to Device Access

Indicator	WM	VI	Rank
1. Laptop Computer	4.56	HP	2
2. Smartphones/Tablets	4.78	HP	1
3. Desktop Computer	3.44	P	3
Overall Weighted Mean	**4.26**	**HP**	

Legend:

Range	Scale	Verbal Interpretation	Symbol
5	4.20-5.00	Highly Prepared	HP
4	3.40-4.19	Prepared	P
3	2.60-3.39	Moderately Prepared	MP
2	1.80-2.59	Least Prepared	LP
1	1.00-1.79	Not Prepared	NP

As displayed in Table 6, the assessment of faculty members in the digital preparedness for the online class of EARIST faculty as to device access rated as *Highly Prepared* with an overall weighted mean of 4.26. Two items are rated as *Highly Prepared*, namely: Smartphones/ Tablets with a weighted mean of 4.56 as rank 1; Laptop Computer with a weighted mean of 4.56 as rank 2; and Desktop Computer rated as *Prepared* with a weighted mean of 4.44 as rank 3;

1.2   Experienced with Technology;

Table 7
Digital Preparedness for Online Class of Faculty Members
As to Experience with Technology

Indicator	WM	VI	Rank
1. Web-conferencing technologies (e.g., Skype, Google Hangouts, Microsoft Team, Messenger, Viber, and Zoom)	4.67	HP	1
2. Online collaborative platforms where your students or co-workers can work asynchronously on activities or assignments (e.g., Google Docs, LMS Dropbox, Office 365, OneDrive, etc.).	4.56	HP	2
3. Online or computer-generated technologies (e.g., web portals, system or cloud-based file storage system, 3D virtual reality technology).	4.33	HP	3
Overall Weighted Mean	**4.52**	**HP**	

As presented in Table 7, the assessment of faculty members in the digital preparedness for the online class of EARIST faculty as to experience with technology rated as *Highly Prepared* with an overall weighted mean of 4.52. All items were rated as *Highly Prepared*, namely: Web-conferencing technologies (e.g., Skype, Google Hangouts, Microsoft Team, Messenger, Viber, and Zoom) with a weighted mean of 4.67 as rank 1; Online collaborative platforms where your students or co-workers can work asynchronously on activities or assignments (e.g., Google Docs, LMS Dropbox, Office 365, OneDrive, etc.) with a weighted mean of 4.56 as rank 2; and Online or computer-generated technologies (e.g., web portals, system or cloud-based file storage system, 3D virtual reality technology) with a weighted mean of 4.33 as rank 3;

1.3   Teaching Environment Preferences;

Table 8
Digital Preparedness for Online Class of Faculty Members
As to Teaching Environment Preferences

Indicator	WM	VI	Rank
1. Use online quiz makers to make it easier to generate, format, and share assessments online and make answer sheets that lets you simply track and mark the answers of each student.	4.39	HP	3
2. Use virtual communication tools or platforms like zoom, goggle meet, etc. on presenting a presentation or sharing an image, file, and to take down notes.	4.44	HP	1.5
3. Use social media platforms like Yahoo, Facebook, Linked In, WhatsApp to share and pile significant information, presentations, and resources related to lessons.	4.44	HP	1.5
Overall Weighted Mean	**4.42**	**HP**	

As shown in Table 8, the assessment of faculty members in the digital preparedness for the online class of EARIST faculty as to teaching environment preferences rated as Highly Prepared with an overall weighted mean of 4.42. All items were rated as *Highly Prepared*, and these are: Use virtual communication tools or platforms like zoom, google meet, etc. on presenting a presentation or sharing an image, file, and to take down notes. and Use social media platforms like Yahoo, Facebook, Linked In, WhatsApp to share and pile significant information, presentations, and resources related to lessons with both weighted mean of 4.44 as rank 1 and 2; and Use online quiz makers to make it easier to generate, format, and share assessments online and make answer sheets that lets you simply track and mark the answers of each student with a weighted mean of 4.39 as rank 3.

1.4   Learning Management System Adaptability

Table 9
Digital Preparedness for Online Class of EARIST Faculty
As to Learning Management System Adaptability

Indicator	WM	VI	Rank
1. Assessing learning and evaluating the LMS.	4.33	HP	3
2. Stimulating high quality intelligent inline discussions with specific and focused questions.	4.44	HP	2
3. It is motivating and moving students collectively and individually through course content.	4.56	HP	1
Overall Weighted Mean	**4.44**	**HP**	

As displayed in Table 9, the assessment of faculty members in the digital preparedness for the online class of EARIST faculty as to learning management system adaptability rated as *Highly Prepared* with an overall weighted mean of 4.44. All items were rated as *Highly Prepared*, such as: Motivating and moving students collectively and individually through course content with a weighted mean of 4.56 as rank 1; Stimulating high quality intelligent inline discussions with specific and focused questions with a weighted mean of 4.44 as rank 2, and; Assessing learning and evaluating the LMS with a weighted mean of 4.33 rank as 3.

Problem No. 2: What are the problems encountered in the digital preparedness for online classes of faculty members as to:

2.1   Computer Literacy;

Table 10
Problems Encountered in the Digital Preparedness for Online Classes of Faculty
Members As to Computer Literacy

Indicator	WM	VI	Rank
1. Insufficient computer knowledge and skills to conduct online lectures.	3.00	ME	5
2. Experience difficulty in accessing reliable information.	3.56	E	2
3. Insufficient computer skills and knowledge to deal with hardware problems.	3.67	E	1
4. The lower level of competence in using online platforms like Zoom, Google Meet, Microsoft Teams, etc.	3.22	ME	4
5. Insufficient training to use the delivery system	3.28	ME	3
Overall Weighted Mean	**3.35**	**ME**	

Legend:

Scale	Range	Verbal Interpretation	Symbol
5	4.20-5.00	Highly Encountered	HE
4	3.40-4.19	Encountered	E
3	2.60-3.39	Moderately Encountered	ME
2	1.80-2.59	Least Encountered	LE
1	1.00-1.79	Not Encountered	NE

As shown in Table 10, the assessment of EARIST faculty on the problem encountered in the digital preparedness for online classes of faculty members as to computer literacy rated as *Moderately Encountered* with an overall weighted mean of 3.35. Two items are rated as *Encountered*, namely: Insufficient computer skills and knowledge to deal with hardware problems with a weighted mean of 3.67 as rank 1; and Experience difficulty in accessing reliable information with a weighted mean of 3.56 as rank 2. Three items are rated as *Moderately Encountered*, such as Insufficient training to use the delivery system with a weighted mean of 3.28 as rank 3; Lower level of competence in using online platforms like Zoom, Google Meet, Microsoft Teams, etc. with a weighted mean 3.22 as rank 4; and Insufficient training to use the delivery system with a weighted of 3.00 as rank 5.

2.2   Time Management;

Table 11
Problems Encountered in the Digital Preparedness for Online Classes of Faculty Members As to Time Management

Indicator	WM	VI	Rank
1. Spend flexible hours conducting online lectures	4.44	HE	1
2. Work-life balance was disrupted	3.00	ME	3.33
3. Lack of ability to make a balance between family and work	3.00	ME	3.33
4. Insufficient time to teach and learn during online courses	3.00	ME	3.33
5. Strategically plan homework assignments.	4.00	E	2
Overall Weighted Mean	**3.49**	**E**	

As portrayed in Table 11, the assessment of EARIST faculty on the problem encountered in the digital preparedness for online classes of EARIST faculty as to time management rated as *Encountered* with an overall weighted mean of 3.49. Spend flexible hours of conducting online lectures rated as *Highly Encountered* with a weighted mean of 4.44 as rank 1; strategically plan homework assignments rated as prepared with a weighted mean of 4.00 as rank 2. Three items are rated as *Moderately Encountered*, such as Work-life balance was disrupted, Lack of ability to make a balance between family and work, and Insufficient time to teach and learn during online courses with the same weighted mean of 3.33 ranks as 3, 4, and 5.

2.3   Technical Issues

Table 12
Problems Encountered in the Digital   Preparedness for Online Classes of Faculty Members As to Technical Issues

Indicator	WM	VI	Rank
1. Lack of adequate Internet access institution.	3.33	ME	3.5
2. Unstable internet connections and power interruptions	3.44	E	1.5
3. System glitch	3.33	ME	3.5
4. Out-dated device & software	3.44	E	1.5
5. Unfamiliar with online learning technical tools	3.22	ME	5
Overall Weighted Mean	**3.35**	**ME**	

As manifested in Table 12, the assessment of faculty members on the problem encountered in the digital preparedness for online classes of EARIST faculty as to technical issues rated as *Moderately Encountered* with an overall weighted mean of 3.35. Two items are rated as *Encountered*, namely: Unstable internet connections and power interruptions, and outdated device & software with both weighted mean of 3.44 as rank 1 and 2. Three items are rated as *Moderately Encountered*, and these are; Lack of adequate Internet access institution and System glitch with both weighted mean of 3.33 as rank 3 and 4; and Unfamiliar with online learning technical tools with a weighted mean of 3.22 as rank 5.

2.4   Barriers

Table 13
Problems Encountered in the Digital Preparedness for Online Classes of Faculty Members As to Barriers

Indicator	WM	VI	Rank
1. Background noise and unconducive workplace during online teaching	4.06	E	2
2. Lack of institutional support	4.11	E	1
3. Fear different learning methods used for online learning	4.00	E	3
4. Unsuitable learning materials	3.56	E	5
5. Lack of social interaction/communication among students	3.78	E	4
Overall Weighted Mean	**3.90**	**E**	

As depicted in Table 13, the assessment of faculty members on the problem encountered in the digital preparedness for online classes of EARIST faculty as to barriers rated as *Encountered* with an overall weighted mean of 3.90. All items were rated as *Encountered*, and these are Lack of institutional support with a weighted mean of 4.11 as rank 1; Background noise and unconducive workplace during online teaching with a weighted mean of 4.06 as rank 2; Fear different learning methods used for online learning with a weighted mean of 4.00 as rank 3; Lack of social interaction/communication among students with a weighted mean of 3.78 as rank 4; and Unsuitable learning materials with a weighted mean of 3.56 as rank 5.

Problem No. 3: Is there a significant relationship between the digital preparedness and problems encountered for online class of EARIST faculty?

Table 14
Relationship Between Digital Preparedness and Problems Encountered for Online Class of EARIST Faculty

r-value	VI	Interpretation	Decision
0.38	WC	Not Significant	Accept H_o

Legend:
1.00   Perfect Correlation (PC)
0.80 – 0.99   Very Strong Correlation (VSC)
0.60 – 0.79   Strong Correlation (SC)
0.40 – 0.59   Moderate Correlation (MC)
0.20 – 0.39   Weak Correlation (WC)
0.01 – 0.19   Negligible Correlation (NC)

As depicted in Table 14, computed r-value is 0.38 which is weak correlation. Hence, there is no significant relationship between digital preparedness and problems encountered for online class of EARIST faculty. Therefore, the hypothesis is accepted.

CONCLUSION

As derived from the findings on the digital preparedness for the online class of EARIST faculty, the following are established:

1.   The assessment made by EARIST faculty members as to device access, experience with technology, teaching environment preferences, and learning management system adaptability yields a result of *Highly Prepared*. Therefore, the EARIST faculty members are digitally prepared for the online class.

2.   The faculty members assessed the problems encountered as to time management and barriers with a rating of *Encountered*. However, as to computer literacy and technical issues, the faculty members made a rating of *Moderately Encountered;*

3.   There is insufficient evidence to conclude that there is a significant relationship between the digital preparedness and problems encountered of the faculty members for online class.

RECOMMENDATION

Based on the findings and conclusions derived from this study, the following are recommended for the EARIST faculty, to wit:

1.   To maintain the digital preparedness for the online class of EARIST faculty, the intensive training for the new technological updates, new style, and new strategy in dealing with the online class must be observed;

2. To have management support like giving additional points in ranking and snacks allowance during the training/webinar. Monetary support for electricity and internet cost in part of the faculty, and extend technological gadget assistance.

3. Create strategies to make a technological experience not traumatic but a spirit of joy and motivations for all faculty and employees of EARIST.

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PREFERRED LEARNING STYLES AND STUDY HABITS OF BSED-SCIENCES LEARNERS: BASIS FOR A PROPOSED INTERVENTION MEASURES

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INTRODUCTION

The major goal of the Philippine educational system is to develop its learners to achieve the full totality of their inherent cognitive, affective, and psychomotor skills. To provide quality basic education that is equitably accessible to all and lay the foundation for life-long learning and service for the common good, summarize the good intention for the excellence of our beloved Department of Education.

Curriculum reforms have been instituted by the Department of Education to ensure that the present Filipino learners are given the best education possible. Various strategies, methods, materials, and other curriculum parameters have been continuously assessed and evaluated on how the teaching-learning situation in the country can be improved. Thus, research sprung as a result of the need of getting things done much better, educators also learn how to improve learning by using/introducing different learning styles.

The Philippine society is fully aware of the impact of today's growing technological advancement. The entire educational process, teaching reforms, reflects the changes of society itself.

Science is one of the subject areas that need an effective, efficient way of teaching because of its nature and complexity. It is such an interesting subject that it deserves to be appreciated and even loved by learners, and never to be considered as a dismal subject especially by slow learners. It is understood; therefore, that science should receive special attention in the K to 12 curricula.

Science aims to help the Filipino child gain a functional understanding of Scientific concepts and principles linked with a real-life situation, acquire skills needed in solving everyday problems.

Along with the new trends are the so-called "learning styles" which More (2002) stated as a very important aspect of today's educational setup. Identifying the kinds of learners whether they prefer to learn in a sequential method or a holistic approach will surely help teachers and students as well make the most in any learning situation. Knowing student's learning styles can be used to predict what kind of instructional strategies or methods would be most effective for a given individual in accomplishing and understanding learning tasks.

The core philosophy of the basic education system in the country is rooted in the life-long learning frame scheme. Functional learning, therefore, does not entail too much memorization but the applicability of the principles learned in varying situations that call for such. While there is a scaffolding technique used in the basic education levels especially in elementary, the students taking up high school became bombarded with a very different scenario. The workloads become too much for them and the transition sometimes resulted in failures to attain high grades in the tool subjects. Thus, the learning styles that have been cultivated must be amplified and matched to a degree that the students can survive the tedious tasks and activities in the secondary courses. Otherwise, students would end up on the losing

side of success, and their dream to become diploma holders would collapse. Unmatched preferences are the main culprit of the students' failure, which should be addressed by the educators.

The logic of lifelong learning suggests that students will become more motivated to learn by knowing more about their strengths and weaknesses as learners. In turn, if teachers can respond to individuals' strengths and weaknesses, then retention and achievement rates in formal programs are likely to rise, and "learning to learn" skills may provide a foundation of lifelong learning. Perhaps a more instrumental impetus is providing by pressures on resources in many educational institutions. For example, if students become more independent in their learning as a result of knowing their strengths and weaknesses, then negative effects from lower levels of contact between lecturers and students will be counterbalanced if students develop more effective learning strategies which can use outside formal contact time.

Likewise, in determining the learning style preferences of the students, the teachers may be able to monitor and reinforce strategically students' progress as to give extra works to fast learners and lessen the burden of those who are late bloomers. Lastly, by determining the academic performance of the subject respondents in the tool subjects, better strategies and methods may be used by the teacher to help the underachievers and supplemented the fast learners. The inter-correlation of the different variables mentioned will be established using appropriate statistics. Through it, better methods can be adapted to help learners acquire better education.

Since teachers are the agents of change and learning much of the blames was on their part. One of the perennial questions that a teacher asks is what should be the best teaching technique or strategy to use to make learning effective. The teacher is an agent of change in the child's behavior. He/she must strive to find a method to be used as a learning tool.

Hopefully, this study might be able to provide the legacy in which effective learning could be based and practiced for which the curriculum is reformed and made to answer the needs of the Filipino learners more specifically in College of Education - Science Department.

Considering the conditions and number of students per class which exceeds the minimum CHEd requirements, the identification of learning style preferences would help principals, administrators, and teachers to devise plans and strategies that would help improve the academic performance of freshmen learners in these big schools.

Conceptual Framework

The conceptual paradigm of the study was formulated as shown in Figure 1 using the Input-Process-Output (IPO) Model.

The **INPUT** includes the learning styles preferences as to environmental, attitudes, sociological, physiological, and psychological; study Habits in terms of concentration, remembering, organizing time, studying a chapter; listening and taking notes, taking test and motivation; respondents were the BSEd-Science students, school heads and teachers; and references used such as theses/dissertation, books, and online sources.

The **PROCESS** includes the assessment of BSEd-Sciences learners in the different learning style preferences and study habits; developing enhancement plan, statistical treatment of data; and analysis and interpretation of data.

OUTPUT *of the study was the acceptability of the proposed intervention measures.*

INPUT

- Learning Styles
  Preferences:
  - Environmental
    Preferences;
  - Attitudes
    Preferences;
  - Sociological
    Preferences;
  - Physiological
    Preferences;
    and
  - Psychological
    Preferences
    Preferences

- Study Habits
  - Concentration
    ;
  - Remembering;
  - Organizing
    time;
  - Studying a
    Chapter;
  - Listening and
    Taking notes;
  - Taking Test;
    and
  - Motivation

- Respondents
  -BSEd-Sciences
  Learners
  -School
  Administrators
  -Teachers
- References
  - Theses/
    Dissertation
  - Books
  - Online
    Science Experts
      Students

PROCESS

- Assessment
  of BSEd-
  Sciences
  Learners
  in the
  different
  learning
  style
  preferences
  and Study
  Habits

- Development
  of an
  Intervention

- Statistical
  treatment of
  data

- Analysis &
  interpretati

OUTPUT

PROPOSED

INTERVENTION

MEASURES

FEEDBACK

Figure 1. *Paradigm of the Study on the Proposed Intervention Measures*

Statement of the Problem

This study was aimed at determining the study habits and learning styles of BSEd-Sciences to serve as the basis for a proposed intervention measure to improve learners' learning in science.

Specifically, this sought to answer the following questions:

1.   What are the preferred learning styles of BSEd-Sciences learners as assessed by the school heads and teachers in terms of:

       1.1.   Environmental Preferences;
       1.2.   Attitudes or emotional preferences;
       1.3.   Sociological preferences;
       1.4.   Physiological preferences; and
       1.5.   Psychological preferences?

2.   What are the study habits of BSEd-Sciences learners in relation to:

       2.1.   Concentration;
       2.2.   Remembering;
       2.3.   Organizing time;
       2.4.   Studying a chapter;
       2.5.   Listening and taking notes;
       2.6.   Taking tests; and
       2.7.   Motivation?

3.   Is there a significant relationship between the preferred learning styles s and study habits of the BSEd-Sciences learners?

4.   What enhancement plan may be proposed to improve learners' learning?

5.   How acceptable is the proposed enhancement plan as assessed by the school's administrators and teachers?

Hypothesis

This study hypothesized that:

There is no significant relationship between the learning style preferences and study habits of the respondents.

Scope and Limitation of the Study

This study focused on identifying the study habits and learning styles of BSEd-Sciences.

The data will be generated from the validated Predominant Learning Styles Inventory that was originally drafted by the researcher based on the Model from Tenedero. It will be used to determine and classify the learning style preferences of the respondents.

The respondents consist of 4-year level and 10 teacher respondents. The study takes place in the school year 2019 – 2020.

Significance of the Study

The findings of this study are of great importance to the following:

Learners. They may be able to assess themselves in terms of their learning style preferences and they could use it as how they can train themselves to become more studious in all their lessons more specifically on the academic aspects. By making them aware of it and by imbibing in them its importance, they may be able to improve in their academic performances since they could now capitalize on it.

Teachers. They may know the importance of providing learners with adequate skills on the subjects they are teaching more particularly on the matching of the appropriate teaching styles to their learning style preferences which could result in better teaching and learning. They could devise ways in teaching learners to acquire the best in their classes especially if they would find out that there is a direct influence of the learning style preferences on the academic performance of learners. They may be able to adjust their teaching strategies, approaches, and methodologies to different students. They may also be able to suit their teaching styles so students can get the best from their teaching. Also, the teachers may be able to motivate and monitor students to develop their learning styles as they progress to higher year levels so they can get the best out of it and become successful learners in high school.

Guidance Counselors. They may be able to assist students to maximize their learning through guided programs which in turn would lead to positive learning. This could be done if they would have a record of the individual learning styles preferences of all students.

Parents. By knowing the learning style preferences of their children, they may be able to monitor, enhance, support, and encourage their children to do better in their studies. They may also fulfill their role to their children in motivating them to study hard and concentrate more in academics.

Curriculum Planners and School Administrators. The result of this study hopes to give them baseline data regarding the factors affecting the learning situation. By having the information concerning learning styles, they could plan for the course of instruction in the curriculum to enhance student's skills acquisition. They may be able to set standard learning competencies in the different subject areas, which will be taught in the high schools and which would answer the aims and objectives of Philippine education about global trends of progressivism and cooperative learning programs. They may also train teachers on what appropriate strategies to be employed.

Other Researchers. This may provide a rich source of information to those who would be interested in this kind of study. They may also negate or validate the findings of this study and they may include other variables, which the present researcher did not tackle.

Definition of Terms

The following terms are defined theistically and operationally for purposes of giving their meaning to the readers.

Attitudes or Emotions Preference refers to the learning style in which the bases for learning are motivation, persistence, responsibility, and structure. It focuses more on the emotional aspect of the learners.

Auditory Learning Style pertains to the learning style preferred by BSEd-Sciences learners since they learn better through listening.

Brain Processing Preference refers to the learning style where the left or right hemisphere of the brain is the basis for learning and focuses more on the cognitive aspect of the learner.

Environmental Preference. This refers to the learning styles with which sound, light, temperature, and design are the elements that are taken into consideration. It also refers to the physical setup of a learning environment.

Instructional Plans. These refer to the learning guide in a particular topic in Intermediate Algebra in which the learning styles of learners are parallel with the teaching style of the teacher.

Interest refers to the motivating force that impulses the individual to learn or attain a thing or an activity. It is also the inclination of the individual to a thing.

Kinesthetic Learning Style is a learning style in which learning takes place by the student carrying out a physical activity, rather than listening to a lecture or merely watching a demonstration.

Learning styles Preferences. These refer to the way student processes difficult information according to the stimulus and which result to learning. It's a learner's consistent way of responding to and using stimuli in the context of learning. It will be used to develop the students' learning skills and also to help them create a rounded learning experience for other people.

Learning Styles refer to the techniques or devices, which a learner may use to acquire knowledge.

Listening and taking notes is a term that applies to the way learners pay attention to the lectures and discussions, as well as taking down notes.

Motivation the term applies to the internal and external motives the learners may have to study his lessons.

Organizing time refers to the manner how the fourth graders arrange their schedule to allow time for studying.

Physiological Needs Preference. This refers to the learning style in which intake of food, time, and mobility are given consideration. This concentrates more on the anatomical and physiological aspects of the learner.

Preferred Learning Styles pertains to the ways that learners perceive, interact with, and respond to the environment particular to an individual, which is presumed to allow that individual to learn best. In this study, this refers to the preferred learning style employed by the respondents.

Proposed Intervention Measures refer to the proposed to improve learners learning and the plan is entered to be implemented among the BSEd-Sciences learners of EARIST-College of Education.

Psychological Needs Preference refers to the needs of the learners that greatly affect their capability to concentrate, process, absorb and retain new and difficult information.

Remembering the term applies the way learners recall the lessons and the materials previously taken.

Sociological Preference refers to the learning style in which the social grouping is the basis of learning as it also focuses on the socialization aspect of the learner whether he wants to be alone or to be in a group.

Study Habits the term refers to the pattern of behavior in studying and undertaking research works and doing other school tasks. This study includes attending classes, participation in classroom activities, and preparations for major examinations.

Studying a chapter refers to advance reading done by the student to be able to have a whole grasp of the topic.

Tactile is a learning style where the learner learns best when he feels the things he learns about.

Taking tests the term applies to the practices followed by the learners in preparing for and in taking actual examinations.

Teaching Style refers to the way teachers teach, which includes their distinctive, mannerisms, complemented by their teaching behaviors and choice of instructional strategies.

Visual learning Style pertains to the learning style preferred by the respondents in using images, pictures, colors, and maps in organizing information and communicating with others.

Synthesis

Based on the presented studies, previous researchers conducted studies on the learning style preferences and study habits of BSEd-Sciences learners.

The local and foreign works of literature and studies stated in the research study help in the development of the research study specifically Magulod (2018), Carbonel (2013), Capuno et. Al (2019), Lumanog (2016), Sila (2018), Churcher et. al (2016), Kiblasan et. Al (2016), Al-fadda et. Al (2020), Ahmad et. al (2014), Banaga and Fabella (2018), Cardino and Ortega-Dela Cruz (2020), Capuno et. al (2019), Sison et. al (2017), Bosman and Schulze (2018), Ndinda (2016), Odiri (2015), Bentil et. al (2018), and Esia-Donkoh et. al (2018).

The similarities of this study to the previous researches were that the researcher studied the learning styles and the study habits of learners in Science. The researcher correlates there learning styles and study habits of the learners in science to develop and proposed intervention measures that aim to improve and guide teachers as well as learners.

The difference of this study from the previous researches was it focuses on the learning style relate to the study habits of the BSEd-Sciences learners from EARIST College of Education.

METHODOLOGY

Research Design

This study is a quantitative and correlational study aimed at examining the relationships between study habits and learning styles of BSEd-Sciences.

This study made use of the descriptive design of the research. This method of research according to Scates and Goodwin (2007) is deal for investigation as the study aimed to present facts concerning the nature, status, and characteristics of any kind of phenomena and related observation to the presence and absence of certain other conditions to develop a frame of the relationship.

The researcher chose this design because it is the most appropriate design in describing the study habits and learning styles of BSEd-Sciences which will be the basis for the proposed intervention.

Population and Sampling

Table 1 presents the population and sampling of the respondents.

Table 1
Population and Sampling

Respondents	Population	Sampling	Percentage
School Administrators	7	6	85.71
Teachers	75	69	92.00
Total	**82**	**75**	**91.46**

As presented in the data, there is 6 or 85.71 percent of school administrators; and 69 or 92.00 percent of teachers. A total of 75 or 91.46 percent of the respondents.

Respondents of the Study

Table 2 shows the respondents of the study.

Table 2
Respondents of the Study

Respondents	Frequency	Percentage
School Administrators	6	8.00
Teachers	69	92.00
Total	**75**	**100**

As shown in the table, 6 or 8.00 percent of the respondents are school administrators; and 69 or 92.00 percent are teachers.

Table 3 reflects the distribution of respondents as to teaching experience.

Table 3
Respondents as to Teaching Experience

Years in Teaching	School Admins		Teachers		Total	
	f	%	f	%	f	%
31 years and above	2	33.33	20	28.99	22	29.33
26 - 30 years	2	33.33	5	7.25	7	9.33
21 - 25 years	1	16.67	5	7.25	6	8.00
15-20 years	1	16.67	0	0.00	1	1.33
11-14 years	0	0.00	3	4.35	3	4.00
6-10 years	0	0.00	19	27.54	19	25.33
5 years and below	0	0.00	17	24.64	17	22.67
Total	**6**	**100**	**69**	**100**	**75**	**100**

As reflected in the data, most of the respondents have 31 years and above in the teaching field with a frequency of 222 or 29.33 percent; followed by 6-10 years with a frequency of 19or 25.33 percent; 5 years and below had a frequency of 17 or 22.67 percent; 26-30 years obtained a frequency of 7 or 9.33 percent; 21-25 years obtained a frequency of 6 or 8.00 percent; 3 or 4.00 percent of the respondents have 11-14 years of service, and 1 or 1.33 percent of the respondents have 15-20nyears of experience.

Table 4 manifests the distribution of respondents as to their educational attainment.

Table 4
Respondents as to Educational Attainment

Educational Attainment	School Admins		Teachers		Total	
	f	%	f	%	f	%
Doctoral Degree	1	16.67	0	0.00	1	1.33
W/Doctoral Units	1	16.67	0	0.00	1	1.33
Master's Degree	4	66.67	4	5.80	8	10.67
W/ Master's Units	0	0.00	42	60.87	42	56.00
Bachelor's Degree	0	0.00	23	33.33	23	30.67
Total	**6**	**100**	**69**	**100**	**75**	**100**

A manifested in the data, 1 or 1.33 percent of the respondents are with a doctoral degree; 1 or 1.33 percent are with doctoral units; 8 or 10.67 percent are with master's degree; 42 or 56.00 percent of the respondents are with master's units, and 23 or 30.67 percent of the respondents are bachelor's degree.

Research Instrument

The study made use of the validated questionnaire of Razon (2018). Few revisions were made to suit the study. It was composed of two parts:

Part I consists of the learning preferred learning styles of learners in terms of environmental preferences, attitude emotion references, sociological references, physiological references, and psychological references, and

Part II, consists of the study habits of BSEd-Sciences learners in terms of concentration, remembering, organizing time, studying a chapter, listening and taking notes, takings tests, and motivation.

Data Gathering Procedures

The researcher in the conduct of the study undertook the following procedures:

1. Sought permission from the superintendent and school administrators relative to the purpose of the study.
2. Constructed and developed the instruments used in the study.
3. Administered the instruments to the school heads and teacher respondents through google forms.
4. Collected the data for statistical treatment with due consideration to the sub-problems.

Statistical Treatment of Data

The data gathered were compiled, collated, and summarized separately per group. The responses for each item were categorized based on the specific problems raised.
The following were utilized in the treatment of the data:

1. **Frequency**. It is the actual response to a specific item/question in the questionnaire where the respondent ticks his choice.

2. **Percentage**. This was used as descriptive statistics or something that describes a part of the whole.

3. **Weighted Mean**. This was used to measure the respondents' assessments. Multiplying each value in the group by the appropriate weight factor does it and the product is summed up and divided by the total number of respondents.

Formula:

$$WM = \frac{(f_5 x5) + (f_4 x4) + (f_3 x3) + (f_2 x2) + (f_1 x1)}{N}$$

The assessments provided by the respondents were interpreted by using the 5-point Likert Scale Method for interpretation of the assessment of the respondents. The concept of the boundary of numerals used the following scales:

Likert's Scale and Interpretation

Scale	Numerical Value	Descriptive Value
5	4.20 – 5.00	Strongly Agree (SA)
4	3.40 – 4.19	Agree (A)
3	2.60 – 3.39	Moderately Agree (MA)
2	1.80 – 2.59	Disagree (D)
1	1.00 – 1.79	Strongly Disagree (SD)

For Study Habits:

Scale	Numerical Value	Descriptive Value
5	4.20 – 5.00	Always (A)
4	3.40 – 4.19	Often (O)
3	2.60 – 3.39	Sometimes (SO)
2	1.80 – 2.59	Seldom (SE)
1	1.00 – 1.79	Never (N)

For Acceptability:

Option	Equivalent	Verbal Interpretation	Symbol
5	4.20 – 5.00	Very Acceptable	VA
4	3.40 – 4.19	Acceptable	A
3	2.60 – 3.39	Moderately Acceptable	MA
2	1.80 – 2.59	Inadequately Acceptable	IA
1	1.00 – 1.79	Not Acceptable	NA

4. **Correlation.** This was used to determine whether or not a significant relationship exists between the study habits of BSEd-Sciences Learners and Learning Style Preferences. It was solved using the formula: (Garcia 2004)

$$r = \frac{N\,(\sum xy) - (\sum x)(\sum y)}{\sqrt{[N\,(\sum x^2) - (\sum x^2)]\,[N\,(\sum y^2) - (\sum y^2)]}}$$

where:

$\sum xy$	= summation of the product x & y
$\sum x$	= summation of x
$\sum y$	= summation of y
$\sum x^2$	= summation of the source of x
$\sum y^2$	= summation of the source of y
N	= no. of Districts/variable
r	= Pearson Product Moment Correlation

To determine the significance of r, the t-test was used with the following formula:

$$t = \frac{r\,\sqrt{n-2}}{\sqrt{1-r^2}}$$

Guide in interpreting coefficient of correlation

+1	-	Perfect correlation.
±0.91 to ±0.99	-	Very high Correlation, very dependable relationship.
±0.71 to ±0.90	-	High Correlation, marked relationship.
±0.41 to ±0.70	-	Moderate Correlation, substantial relationship.
±0.21 to ±0.40	-	Slight Correlation, but small relationship.
±0.01 to ±0.20	-	Slight Correlation, almost negligible relationship.
0	-	No correlation

PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA

Sub-Problem No. 1. What are the preferred learning styles of BSEd-Scienceslearners as assessed by the school administrators and teachers in terms of:

1.1 *Environmental Preferences*

Table 5 shows the preferred learning styles of BSEd-Sciences learners as assessed by the School Administrators and Teachers as to Environmental Preferences.

As shown in the data, all items were assessed by the respondents as agree, these are: the students prefer a silent classroom to study (WM=4.01) rank 1; students to work in bright light (WM=3.93) rank 2; students prefer to look around the classroom (WM=3.92) rank 3; students prefer quiet background music (WM=3.90) rank 4; students prefer to sit on a straight back chair (WM=3.82) rank 5; students prefer to sit on the floor or lie on a sofa (WM=3.78) rank 6; students prefer to study outside of the classroom (WM=3.76) rank 7; students prefer to study alone in a quiet room (WM=3.74) rank 8; students prefer low or natural lighting (WM=3.68) rank 9, and students prefer a very quiet and close classroom (WM=3.55) rank 10.

The assessment of the respondents on the preferred learning style of BSEd-Sciences learners in terms of environmental preferences obtained an overall mean value of 3.81 and was interpreted as agree.

Table 5
Preferred Learning Style as to Environmental Preferences

Criteria	School Admins		Teachers		Composite		Rank
	WM	VI	WM	VI	WM	VI	
1. Students prefer to study outside of the classroom.	4.07	A	3.45	A	3.76	A	7
2. The students prefer a silent classroom to study.	4.03	A	4.10	A	4.07	A	1
3. Students prefer quiet background music.	4.05	A	3.74	A	3.90	A	4
4. Students prefer to sit on a straight back chair	4.07	A	3.57	A	3.82	A	5
5. Students prefer to sit on the floor or lie on a sofa.	4.07	A	3.48	A	3.78	A	6
6. Students to work in bright light	3.67	A	4.19	A	3.93	A	2
7. Students prefer low or natural lighting	4.01	A	3.35	SLA	3.68	A	9
8. Students prefer a very quiet and close classroom.	3.27	SLA	3.83	A	3.55	A	10
9. Students prefer to study alone in a quiet room.	4.05	A	3.42	A	3.74	A	8
10. Students prefer to look around the classroom.	4.00	A	3.83	A	3.92	A	3
Overall Mean	**3.93**	**A**	**3.70**	**A**	**3.81**	**A**	

Legend:

Scale	Numerical Value	Descriptive Value
5	4.20 – 5.00	Strongly Agree (SA)
4	3.40 – 4.19	Agree (A)
3	2.60 – 3.39	Slightly Agree (SLA)
2	1.80 – 2.59	Disagree (D)
1	1.00 – 1.79	Strongly Disagree (SD)

According to Sila (2018), learning styles influence students in all levels of education and a mismatch of teaching styles to preferred learning styles makes learning a stressful experience for many learners. He defined it as characteristic cognitive, affective, and physiological behaviors that serve as relatively stable indicators of how learners perceive, interact with and respond to the learning environment. They are ways students prefer to receive and process information during the learning process.

1.2   Attitude or Emotions Preferences

Table 6 presents the preferred learning styles of BSEd-Sciences learners as assessed by the School Administrators and Teachers as to Attitude or Emotions Preferences.

As presented in the table, most of the criteria were assessed by the respondents as agree, these are: students are well-behaved in class when attention is fully required (WM=4.15) rank 1; students are well-motivated when they are being praised (WM=4.14) rank 2; students want to give them attention when they misbehave (WM=4.12) rank 3; students want to be understood why they don't understand the lesson (WM=4.11) rank 4; students need to define the steps to complete a task (WM=4.10) rank 5; students need the motivation to learn (WM=4.09) rank 6; students want to be understood in times of late submission of outputs (WM=4.08) rank 7; students find it difficult to be persistent in their learning (WM=4.06) rank 8; students know what to do but have trouble defining the steps of the output (WM=4.03) rank 9; students know the task given and they don't need assistance (WM=3.52) rank 10.

Table 6
Preferred Learning Style as to Attitude or Emotions Preferences

Criteria	School Admins		Teachers		Composite		Rank
	WM	VI	WM	VI	WM	VI	
1. Students want to be understood in times of late submission of outputs.	4.00	A	4.15	A	4.08	A	7
2. Students want to be understood why they don't understand the lesson.	4.03	A	4.18	A	4.11	A	4
3. Students want to give attention when they misbehave.	4.05	A	4.19	A	4.12	A	3
4. Students know what to do but have trouble defining the steps of the output.	4.00	A	4.06	A	4.03	A	9
5. Students know the task given and they don't need assistance.	3.67	A	3.36	SLA	3.52	A	10
6. Students need the motivation to learn.	4.00	A	4.17	A	4.09	A	6
7. Students find it difficult to be persistent in their learning	4.03	A	4.09	A	4.06	A	8
8. Students need to define the steps to complete a task.	4.07	A	4.13	A	4.10	A	5
9. Students are well-motivated when they are being praised.	4.13	A	4.15	A	4.14	A	2
10. Students are well-behaved in class when attention is fully required.	4.17	A	4.13	A	4.15	A	1
Overall Mean	**4.02**	**A**	**4.06**	**A**	**4.04**	**A**	

Generally, the assessment of the respondents on the preferred learning style of BSEd-Sciences learners in terms of attitude or emotional preferences gained an overall mean value of 4.04 and was interpreted as agree.

1.3 Sociological Preferences

Table 7 reveals the preferred learning styles of BSEd-Sciences learners as assessed by the School Administrators and Teachers as to Sociological Preferences.

As revealed in the data, nine items were assessed by the respondents as agree. These are: students learn when they are having a fellow student, a teacher, or a family member to discuss the topic with (WM=4.18) rank 1; students achieve better results when they learn with a friend or colleague (WM=4.16) rank 2.5; students require a lot more guidance than others (WM=4.16) rank 2.5; students prefer teachers to provide with an opportunity to work together with others who have good language skills (WM=4.15) rank 4; students find it easier to learn when they can do it together (WM=4.13) rank 5; students understand that language learning lends itself naturally to pair work and group work (WM=4.08) rank 6; students prefer to study with their classmates (WM=4.02) rank 7; students prefer their family members to help them to better understand, perceive and remember the information (WM=3.96) rank 8; students learn with their teachers alone (WM=3.45) rank 9.

Table 7
Preferred Learning Style of as to Sociological Preferences

Criteria	School Admins		Teachers		Composite		Rank
	WM	**VI**	**WM**	**VI**	**WM**	**VI**	
1. Students prefer to study by themselves	3.33	SLA	3.22	SLA	3.28	SLA	10
2. Students prefer to study with their classmates	4.00	A	4.03	A	4.02	A	7
3. Students achieve better results when they learn with a friend or colleague.	4.17	A	4.14	A	4.16	A	2.5
4. Students require a lot more guidance than others.	4.13	A	4.19	A	4.16	A	2.5
5. Students find it easier to learn when they can do it together.	4.00	A	4.26	SA	4.13	A	5
6. Students learn with their teachers alone.	3.50	A	3.39	SLA	3.45	A	9
7. Students learn when they are having a fellow student, a teacher, or a family member to discuss the topic with.	4.13	A	4.23	SA	4.18	A	1
8. Students prefer their family members to help them to better understand, perceive and remember the information.	4.11	A	3.81	A	3.96	A	8
9. Students understand that language learning lends itself naturally to pair work and group work	4.03	A	4.13	A	4.08	A	6
10. Students prefer teachers to provide with an opportunity to work together with others who have good language skills	4.07	A	4.22	SA	4.15	A	4
Overall Mean	**3.95**	**A**	**3.96**	**A**	**3.95**	**A**	

While one was assessed by the respondents as slightly agree, namely: students prefer to study by themselves (WM=3.28) rank 10.

The respondents assessed the preferred learning style of BSEd-Sciences learners in terms of sociological preferences as agreeing evidenced by the overall mean value of 3.95.

1.4   *Physiological Preferences*

Table 8 portrays the preferred learning styles of BSEd-Sciences learners as assessed by the School Administrators and Teachers as to Physiological Preferences.

As portrayed in the data, three items were assessed by the respondents as strongly agree, these are: students prefer to move in a certain way to avoid boredom (WM=4.23) rank 1; students prefer games/activities involving movement which can be very useful for re-energizing them throughout the day (WM=4.22) rank 2, and students prefer more activities than lectures (WM=4.21) rank 3.

Five were assessed as agreeing: students prefer warm-up activities involving physical movement before class (WM=4.18) rank 4; students learn more effectively if learning occurs in small manageable chunks interspersed with regular breaks (WM=4.15) rank 5;   students   are active early in the morning (WM=4.07) rank 6; students prefer to have frequent "breaks" in class (WM=4.06) rank 7, and students prefer to move around while learning (WM=3.91) rank 8.

Table 8
Preferred Learning Style as to Physiological Preferences

Criteria	School Admins		Teachers		Composite		Rank
	WM	VI	WM	VI	WM	VI	
1. Students prefer to move around while learning.	4.00	A	3.81	A	3.91	A	8
2. Students prefer to have frequent "breaks" in class.	4.17	A	3.94	A	4.06	A	7
3. Students prefer to work for a long time without breaks.	3.00	SLA	2.86	SLA	2.93	SLA	10
4. Students learn more effectively if learning occurs in small manageable chunks interspersed with regular breaks.	4.00	A	4.29	SA	4.15	A	5
5. Students are active early in the morning.	4.00	A	4.13	A	4.07	A	6
6. Students are active late in the afternoon.	3.00	SLA	3.23	SLA	3.12	SLA	9
7. Students prefer warm-up activities involving physical movement before class.	4.23	SA	4.13	A	4.18	A	4
8. Students prefer games/activities involving movement which can be very useful for re-energizing them throughout the day.	4.17	A	4.27	SA	4.22	SA	2
9. Students prefer more activities than lectures.	4.17	A	4.24	SA	4.21	SA	3
10. Students prefer to move in a certain way to avoid boredom.	4.23	SA	4.22	SA	4.23	SA	1
Overall Mean	**3.90**	**A**	**3.91**	**A**	**3.90**	**A**	

The rest were slightly agreed: students are active late in the afternoon (WM=3.12) rank 9, and students who prefer to work for a long time without breaks (WM=2.93) rank 10.

The assessment of the respondents on the preferred learning style of BSEd-Sciences learners in terms of physiological preferences gained an overall mean value of 3.90 and was interpreted as agree.

According to the article made by Al-fadda et. Al (2020), learners differ in the ways they understand, analyze and remember certain information. This difference in understanding and treatment of knowledge leads to a difference in academic achievement. This diversity of understanding and responding to information might be linked to students' learning styles.

However, there is a debate among educators and researchers about the effects of learning styles on learners' academic achievement. Learning styles are considered by several educators to be a means of relating information in a better way to learners in the way they can understand it. As a result, various educators have examined the effects that learning styles might have on learners' academic achievement and were faced with contradictory findings.

1.5   Psychological Preferences

Table 9 reflects the assessment of the respondents on the preferred learning style of BSEd-Sciences learners in terms of psychological preferences.

Table 9
Learning Style Preferences as to Psychological Preferences

Criteria	School Admins		Teachers		Composite		Rank
	WM	VI	WM	VI	WM	VI	
1. Students think globally when they learn English subjects.	3.50	A	4.00	A	3.75	A	9
2. Students think analytically.	4.17	A	3.87	A	4.02	A	5.5
3. Students need to know the details to be able to assemble the big picture.	3.83	A	4.19	A	4.01	A	7
4. Students perform better when there is a positive, respectful relationship between learners.	4.00	A	4.22	SA	4.11	A	3
5. Students understand that the learning atmosphere is tolerant and supportive.	4.23	SA	4.26	SA	4.25	SA	1
6. Students prefer to love the subject than anything else.	4.17	A	3.87	A	4.02	A	5.5
7. Students are emotionally disturbed by peer pressure, family and others.	3.50	A	3.92	A	3.71	A	10
8. Students are well-motivated to learn the subject.	4.17	A	3.99	A	4.08	A	4
9. Students understand what is supposed to be done in the subject.	3.83	A	4.01	A	3.92	A	8
10. Students understand the importance of English subject in their lives.	4.23	SA	4.10	A	4.17	A	2
Overall Mean	**3.96**	**A**	**4.04**	**A**	**4.00**	**A**	

As reflected in the data, one item was assessed as strongly agree, namely: students understand that learning atmosphere is tolerant and supportive (WM=4.25) rank 1.

The rest were assessed as agree, namely: students understand the importance of English subject in their lives (WM=4.17) rank 2; students perform better when there is a positive, respectful relationship between learners (WM=4.11) rank 3; students are well-motivated to learn the subject (WM=4.08) rank 4; students think analytically (WM=4.02) rank 5.5; students prefer to love the subject than anything else (WM=4.02) rank 5.5; students need to know the details to be able to assemble the big picture (WM=4.01) rank 7; students understand what is supposed to be done in the subject (WM=3.92) rank 8; students think globally when they learn English subject (WM=3.75) rank 9 and students are emotionally disturbed by peer pressure, family and others (WM=3.71) rank 10.

The respondents assessed the preferred learning style of BSEd-Sciences learners in terms of psychological preferences as agree with an overall mean value of 4.00.

Summary

Table 10 exhibits the summary of the assessment of the respondents on the preferred learning style of BSEd-Sciences learners.

As exhibited in the data, all the variables for the preferred learning style of BSEd-Sciences learners assessed by the respondents as agree, these are attitudes or emotions (WM=4.04) rank 1; psychological preferences (WM=4.00) rank 2; sociological preferences (WM=3.95) rank 3; physiological preferences (WM=3.90) rank 4; and environmental preferences (WM=3.81) rank 5.

Table 10
Summary Assessment

Variables	School Admins		Teachers		Composite		Rank
	WM	VI	WM	VI	WM	VI	
1. Environmental Preferences	3.93	A	3.70	A	3.81	A	5
2. Attitude or Emotions Preferences	4.02	A	4.06	A	4.04	A	1
3. Sociological Preferences	3.95	A	3.96	A	3.95	A	3
4. Physiological Preferences	3.90	A	3.91	A	3.90	A	4
5. Psychological Preferences	3.96	A	4.04	A	4.00	A	2
Overall Mean	**3.95**	**A**	**3.93**	**A**	**3.94**	**A**	

Generally, the respondents' assessment on the preferred learning style of BSEd-Sciences learners gained an overall mean value of 3.94 and was interpreted as agree.

Carbonel (2013) mentioned in his study that Science Learning is regarded as complex and technical that most students are afraid of. To minimize such negative reactions of students towards the subject, the educators continuously keep on finding solutions to this by considering the learning styles and study habits of the learners. Since learning can take place in three ways such as learning styles, study habits, experiences, and formal pieces of training.

Sub-Problem No. 2. What are the study habits of BSEd-Sciences learners in relation to:

2.1   Concentration

Table 11 depicts the study habits of BSEd-Sciences learners in relation to concentration.

As depicted in the data, three items were assessed by the respondents as always, namely: I make sure that I am not sleepy when I study (WM=4.26) rank 1; I organize my learning materials to be able to concentrate and focus more on my studies (WM=4.24) rank 2, and I usually seek a quiet place to study (WM=4.23) rank 3.

The rest were assessed as often: I know what time of the day I do my best studying (WM=4.18) rank 4; I focus entirely on my work when I study (WM=4.17) rank 5; I easily find enough time to study (WM=4.16) rank 6; before I begin an assignment, I estimate how long it will take me and then try to beat the clock (WM=4.13) rank 7;   I set aside a regular time for studying every day (WM=4.05) rank 8; I have no difficulty concentrating when I study (WM=3.88) rank 9, and daydreaming does not interfere with my studying (WM=3.83) rank 10.

Table 11
Study Habits as to Concentration

	Criteria	WM	VI	Rank
1.	I set aside a regular time for studying every day.	4.05	O	8
2.	I organize my learning materials to be able to concentrate and focus more on my studies.	4.24	A	2
3.	I focus entirely on my work when I study.	4.17	O	5
4.	I make sure that I am not sleepy when I study.	4.26	A	1
5.	Before I begin an assignment, I estimate how long it will take me and then try to beat the clock.	4.13	O	7
6.	I have no difficulty concentrating when I study.	3.88	O	9
7.	I usually seek a quiet place to study.	4.23	A	3
8.	I easily find enough time to study.	4.16	O	6
9.	I know what time of the day I do my best studying.	4.18	O	4
10.	Daydreaming does not interfere with my studying.	3.83	O	10
	Overall Mean	**3.82**	**O**	

Legend:

Scale	Numerical Value	Descriptive Value
5	4.20 – 5.00	Always (A)
4	3.40 – 4.19	Often (O)
3	2.60 – 3.39	Sometimes (SO)
2	1.80 – 2.59	Seldom (SE)
1	1.00 – 1.79	Never (N)

The respondents assessed the study habits of BSEd-Sciences learners in relation to concentration as often with an overall mean value of 3.82.

Kiblasan et. Al (2016) believed that learning is a need of an individual to be educated at which, it is a requirement for learners to possess a study habit for them to learn as learning is the only key to eradicate illiteracy no matter what level it is. Through education, learners can be developed so it is a must for educators to upgrade teaching effectiveness to promote a quality teaching-learning environment. This is the reason why many efforts by school administrators have been done to improve the retention of their students through continuous academic advising, orientations, facility improvements, mentoring, and modifications on curriculum and pedagogy to ensure that the student's learning style and study habits are explored without reducing their self-determination.

2.2 Remembering

Table 12 explains the study habits of BSEd-Sciences learners in relation to remembering.

As explained in the data, one item was assessed as always, namely: because I want to remember, I listen carefully to any explanations in class (WM=4.25) rank 1.

The rest were assessed as often, these are: to remember better, I check main headings and the summary before I read a chapter or article (WM=4.19) rank 2; I prefer to

study with others (WM=4.12) rank 3; I remember most of the things I study (WM=3.99) rank 4; I learn better by reading than by listening to someone (WM=3.97) rank 5; I learn better by reading textbooks than by listening to lectures (WM=3.71) rank 6, and I wait until the night before a test to review my lecture notes to make them still fresh in my memory (WM=3.64) rank 7.

Table 12
Study Habits as to Remembering

Criteria	WM	VI	Rank
1. I prefer to study with others.	4.12	O	3
2. I learn better by reading than by listening to someone.	3.97	O	5
3. I learn better by reading textbooks than by listening to lectures.	3.71	O	6
4. I remember most of the things I study.	3.99	O	4
5. To remember better, I check the main headings and the summary before I read a chapter or article.	4.19	O	2
6. I wait until the night before a test to review my lecture notes to make them still fresh in my memory.	3.64	O	7
7. Because I want to remember, I listen carefully to any explanations in class.	4.25	A	1
Overall Mean	**3.98**	**O**	

The respondents assessed the study habits of BSEd-Sciences learners in relation to remembering as often with an overall mean value of 3.98.

2.3 Studying a Chapter

Table 13 gives the study habits of BSEd-Sciences learners in relation to studying a chapter.

Table 13
Study Habits as to Studying a Chapter

Criteria	WM	VI	Rank
1. Before I read a chapter, I turn headings into questions so that I know what I'm going to learn.	4.04	O	2
2. I feel uncomfortable reading a chapter unless I've read all the headings and the summary first.	3.93	O	4
3. I take time to study a chapter.	4.07	O	1
4. I stop to recite what I remember after reading each section in a chapter.	3.80	O	8
5. I read the questions at the end of the chapter before I begin reading the chapter.	3.96	O	3
6. I take time to review the chapter soon after I read it.	3.91	O	5
7. I spend too much time on some topics and not enough on others.	3.82	O	7
8. I skip over charts, graphs, and labels when I read a chapter.	3.49	O	9
9. I can readily tell what is important in a chapter.	3.83	O	6
Overall Mean	**3.87**	**O**	

Given in the data, all the items were assessed by the respondents as often, these are: I take time to study a chapter (WM=4.07) rank 1; before I read a chapter, I turn headings into questions so that I know what I'm going to learn (WM=4.04) rank 2; I read the questions at the end of the chapter before I begin reading the chapter (WM=3.96) rank 3; I feel uncomfortable reading a chapter unless I've read all the headings and the summary first (WM=3.93) rank 4; I take time to review the chapter soon after I read it (WM=3.91) rank 5; I can readily tell what is important in a chapter (WM=3.83) rank 6; I spend too much time on some topics and not enough on others (WM=3.82) rank 7; I stop to recite what I remember after reading each section in a chapter (WM=3.80) rank 8; and I skip over charts, graphs, and labels when I read a chapter (WM=3.49) rank 9.

The respondents assessed the study habits of BSEd-Sciences learners in relation to studying a chapter as often with an overall mean value of 3.87.

2.4 Listening and taking notes

Table 14 presents the study habits of BSEd-Sciences learners in relation to listening and taking notes.

Table 14
Study Habits as to Listening and Taking Notes

Criteria	WM	VI	Rank
1. I can determine the importance of lectures.	4.22	A	2
2. Before class starts, I review the previous day's lecture notes.	4.16	O	3
3. I don't bother taking notes on lectures.	3.46	O	7
4. I check my lecture notes to fill in any missed words soon after the lecture.	4.01	O	4
5. I listen to a well-organized lecture.	4.35	A	1
6. I try to record everything a teacher says in a lecture.	3.68	O	5
7. I listen carefully to a lecture but I do not take notes.	3.54	O	6
Overall Mean	**3.92**	**O**	

As presented in the data, two items were assessed by the respondents as always, these are: I listen to a lecture that is well organized (WM=4.35) rank 1, and I can determine importance in lectures (WM=4.22) rank 2.

The rest were assessed as often: before class starts, I review the previous day's lecture notes (WM=4.16) rank 3; I check my lecture notes to fill in any missed words soon after the lecture (WM=4.01) rank 4; I try to record everything a teacher says in a lecture (WM=3.68) rank 5; I listen carefully to a lecture but I do not take notes (WM=3.54) rank 6, and I don't bother taking notes on lectures (WM=3.46) rank 7.

The respondents assessed the study habits of BSEd-Sciences learners in relation to listening and taking notes as often with an overall mean value of 3.92.

2.5 Taking tests

Table 15 reflects the study habits of BSEd-Sciences learners in relation to staking tests.

As reflected in the data, two items were assessed by the respondents as always, these are: if I have any time left, I check over my test avoid errors (WM=4.35) rank 1; and before answering an essay question, I organize what I am going to write (WM=4.26) rank 2.

Three were assessed as often: using lecture notes and textbook, I can usually predict 50-60 percent of the questions on a test (WM=4.00) rank 3; before starting a test, I plan how much time to use on each section of the test (WM=3.87) rank 4; and I usually lose points on my exams because of careless mistakes (WM=3.78) rank 5.

Table 15
Study Habits as to Taking Tests

Criteria	WM	VI	Rank
1. Have trouble finishing tests on time.	3.22	SO	6
2. Before answering an essay question, I organize what I am going to write.	4.26	A	2
3. Using lecture notes and textbooks, I can usually predict 50-60 percent of the questions on a test	4.00	O	3
4. I usually lose points on my exams because of careless mistakes.	3.78	O	5
5. Tests make me so nervous that I can't do my best.	3.17	SO	7
6. Before starting a test, I plan how much time to use on each section of the test.	3.87	O	4
7. If I have any time left, I check over my test to avoid errors	4.35	A	1
Overall Mean	**3.81**	**O**	

While two items were assessed as sometimes, namely: have trouble finishing tests on time (WM=3.22) rank 6; and tests make me so nervous that I can't do my best (WM=3.17) rank 7.

The respondents assessed the study habits of BSEd-Sciences learners in relation to taking tests as often with an overall mean value of 3.81.

2.6   Motivation

Table 16 shows the study habits of BSEd-Sciences learners in relation to motivation.

Table 16
Study Habits as to Motivation

Criteria	WM	VI	Rank
1. I do not have much luck following a definite study schedule.	3.48	O	9
2. I do not give up if an assignment is difficult.	4.16	O	5
3. I enjoy learning.	4.32	A	1
4. I could get better grades.	4.28	A	2
5. I'd rather work on tests, quizzes, and exercises fast than making sure of getting a perfect score.	3.93	O	7
6. Before I leave class, I make sure that I know what homework to do and how to do it.	4.21	A	3
7. Good grades are important to me.	4.14	O	6
8. I put off studying what I should be doing.	3.83	O	8
9. I really "dig in" when I study.	4.19	O	4
Overall Mean	**4.06**	**O**	

As shown in the data, three items were assessed by the respondents as always, namely: I enjoy learning (WM=4.32) rank 1; I could get better grades (WM= 4.28) rank 2; and before I leave class, I make sure that I know what homework to do and how to do it (WM=4.21) rank 3.

The rest were assessed as often: I really "dig in" when I study (WM=4.19) rank 4; I do not give up if an assignment is difficult (WM=4.16) rank 5; good grades are important to me (WM=4.14) rank 6;   I'd rather work on tests, quizzes and exercises fast than making sure of getting a perfect score (WM=3.93) rank 7; I put off studying that I should be doing (WM=3.83) rank 8, and I do not have much luck following a definite study schedule (WM=3.48) rank 9.

The respondents assessed the study habits of BSEd-Sciences learners in relation to motivation as often with an overall mean value of 4.06.

Summary

Table 17 portrays the summary of the assessment of the respondents on the study habits of BSEd-Sciences learners.

Table 17
Summary of the Assessment on Preferred
Study Habits of BSEd-Sciences Learners

Variables	WM	VI	Rank
1. Concentration	3.82	O	5
2. Remembering	3.98	O	2
3. Studying a chapter	3.87	O	4
4. Listening and taking notes	3.92	O	3
5. Taking tests	3.81	O	6
6. Motivation	4.06	O	1
Overall Mean	**3.91**	**O**	

As portrayed in the data, all the variables were assessed by the respondents as often, these are motivation (WM=4.06) rank 1; remembering (WM=3.98) rank 2; listening and taking notes (WM=3.92) rank 3; studying a chapter (WM=3.87) rank 4; concentration (WM=3.82) rank 5; and taking tests (WM=3.81) rank 6.

In the journal made by Capuno et. Al (2019) difficulty in understanding the subject matter and teacher-related factors were the primary reasons why these students hate science. This dislike of the subject will result in a negative attitude towards the subject. Moreover, the students who hate the subject do not like studying the subject. More importantly, in science, wherein concepts are difficult for the students to understand, their study habits must be developed. Trying to study subjects where they have negative feelings will not help them improve their performance in the subject. Consequently, students' performance in science will be affected because they will not have time to study the subject.

Sub-Problem No. 3. Is there a significant relationship between the preferred learning styles and the study habits of learners?

Table 18 manifests the significant relationship between the preferred learning styles and study habits of BSEd-Sciences learners.

For Environmental Preference vs. Study Habits, the computed correlation value of .728 is higher than the critical value of .497 at a five percent level of significance with 14 degrees of freedom. It signifies that there is a significant relationship that led to rejecting the hypothesis. Furthermore, there is a high correlation, marked relationship between the study habits of BSEd-Sciences learners and preferred learning styles as to environmental preferences.

As to Attitudes or Emotional Preferences vs. Study Habits, the computed correlation value of .505 is greater than the critical value of .497 at a five percent level of significance with 14 degrees of freedom. It signifies that there is a significant relationship that led to rejecting the hypothesis. Furthermore, there is a moderate correlation, the substantial relationship between the study habits of BSEd-Sciences learners and preferred learning styles as to attitudes or emotional preferences.

Table 18
Significant Relationship

Variables	Correlation value	cv at .05	df	Interpretation	Decision
1. Environmental Preferences vs Study Habits	.728	.497	14	Significant	Reject H_o High Correlation, marked relationship
2. Attitudes or Emotional Preferences vs. Study Habits	.505	.497	14	Significant	Reject H_o Moderate Correlation, substantial relationship
3. Sociological Preferences vs. Study Habits	.179	.497	14	Not Significant	Accept H_o Slight Correlation, almost Negligible relationship
4. Physiological Preferences vs. Study Habits	.317	.497	14	Not Significant	Accept H_o Slight Correlation, but small relationship
5. Psychological Preferences vs. Study Habits	.039	.497	14	Not Significant	Accept H_o Slight Correlation, almost negligible relationship

Guide in interpreting coefficient of correlation

+1	-	Perfect correlation.
±0.91 to ±0.99	-	Very high Correlation, very dependable relationship.
±0.71 to ±0.90	-	High Correlation, marked relationship
±0.41 to ±0.70	-	Moderate Correlation, substantial relationship.
±0.21 to ±0.40	-	Slight Correlation, but small relationship.
±0.01 to ±0.20	-	Slight Correlation, almost negligible relationship.
0		- No correlation

As to Sociological Preferences vs. Study Habits, the computed correlation value of .179 is lower than the critical value of .497 at a five percent level of significance with 14 degrees of freedom. It signifies that there is no significant relationship that led to accepting the hypothesis. Furthermore, there is a slight correlation, almost negligible relationship between the study habits of BSEd-Sciences learners and preferred learning styles as to sociological preferences.

As to Physiological Preferences vs. Study Habits, the computed correlation value of .317 is below the critical value of .497 at a five percent level of significance with 14 degrees of freedom. It signifies that there is no significant relationship that led to accepting the hypothesis. Furthermore, there is a slight correlation, but then a small relationship between the study habits of BSEd-Sciences learners and preferred learning styles as to physiological preferences.

As to Psychological Preferences vs. Study Habits, the computed correlation value of .039 is smaller than the critical value of .497 at a five percent level of significance with 14 degrees of freedom. It signifies that there is no significant relationship that led to accepting the hypothesis. Furthermore, there is a slight correlation, but almost negligible between the study habits of BSEd-Sciences learners and preferred learning styles as to psychological preferences.

Capuno et. Al (2019) revealed that those respondents had positive attitudes towards science in terms of its value while they had a neutral attitude when it comes to their self-confidence, enjoyment, and motivation in science. Also, the study shows that there was a negligible positive correlation between the attitudes and academic performance of the respondents in terms of their self-confidence, enjoyment, and motivation while there was a weak positive correlation between the value of science and their academic performance in science. It was concluded that students' attitudes and their study habits are significant factors that affect their performance in science. The researchers strongly recommend the utilization of the enhancement plan in the teaching of science to junior high school students.

Sub-Problem No. 4. Based on the findings of the study, what intervention measures may be recommended to improve learners learning in Science?

RESEARCH TITLE: **PREFERRED LEARNING STYLES AND STUDY HABITS OF BSED-SCIENCES LEARNERS IN SCIENCE: BASIS FOR A PROPOSED INTERVENTION MEASURES**

OUTPUT TITLE: **INTERVENTION PLAN**

INTRODUCTION

Science is a key subject necessary to the promotion of economic development and teachers must be able to motivate the learners to love and appreciate the subject. Students have varied learning styles, which are characterized by strengths and preferences in the ways that they process information and learn.

Science is one of the subject areas that need an effective, efficient way of teaching because of its nature and complexity. It is such an interesting subject that it deserves to be appreciated and even loved by learners, and never to be considered as a dismal subject especially by slow learners. It is understood; therefore, that science should receive special attention in the K to 12 curricula.

Educators need to be observant that some students prefer certain methods of learning more than others. The study proves that by discovering and better understanding students' learning styles, they can employ techniques that will improve the rate and quality of learning.

In determining the learning style preferences of the students, the teachers may be able to monitor and reinforce strategically students' progress as to give extra works to fast learners and lessen the burden of those who are late bloomers. Lastly, by determining the academic performance of the subject respondents in the tool subjects, better strategies and methods may be used by the teacher to help the underachievers and supplemented the fast learners. The inter-correlation of the different variables mentioned will be established using appropriate statistics. Through it, better methods can be adapted to help learners acquire better education.

The Intervention Plan features the Key Area, Objectives, Strategy & Activities, Person(s) Responsible, TimeLine, Sources of Funds, and Performance Indicators.

OBJECTIVES

Upon implementation in School Year 2022, school administrators and teachers should:

1. Push teachers to do better to meet the needs of the students using varied learning styles.

2. Understand their students and the way they learn.

3. Serve as a guide for teachers in handling students with varied learning preferences and different study habits.

Table 18
Matrix of an Intervention Plan

KEY AREA	OBJECTIVES	STRATEGY & ACTIVITIES	PERSON/S RESPONSIBLE	TIME FRAME	SOURCES OF FUNDS	PERFORMANCE INDICATORS
STUDENT LEARNING PREFERENCES	Provide a learning **environmental preference** to the science learners.	<u>Build a Good Learning & a Motivating Environment</u> - School should provide enough chairs for students to sit comfortably - Rooms should be illuminated since learners can work in bright light - The classroom must be well lighted, free from noise - Build self-esteem of the learners by ensuring classes are relaxed - Reduce anxiety by explaining clearly and by being responsive to questions to support a good and motivating environment	School Head School Plant Head Teachers	School Year 2022	MOOE	Schools produce a positive learning environment.

Provide a motivational approach to the science students to boost their **attitude or emotional preferences**.	<u>Utilize Various Instructional Tools, Techniques, and Interventions to help Foster Positive Science Attitudes in Learners</u> - Growth Mindset - Praising learners for their effort - allow students to hear that encountering challenges is a normal part of learning science. <u>Cultivate a Sense of Belonging in Science</u> - allow the student to work on collaborative group tasks - students could tell the groups what they cannot understand	Science Coordinator Science Teachers	School Year 2022	Personal	Learners developed an understanding of the rudiments of learning science and improve their attitude towards the subject.
Buildout among learners the **psychological** processing of **learning**.	<u>Teachers should intervene through the Listening & Taking Notes Approach</u> - inculcating among learners to be positive in learning Science subject, respectful between learners. - Developing among learners an atmosphere of tolerance and support. - Keep on explaining the details of the tasks before allowing the students to start working on the classroom task.	Science Coordinator Science Teachers	School Year 2022	Personal	Learners have strengthened their belief that they can learn individually at home.
Realize the **sociological preferences** of learners to process learning	<u>Group Learning & Studying a Chapter Approach:</u> - Learners who find it easier to learn with the group - Learners learn through coaching from teachers, family members, and to his fellow student. - Partner those slow learners with the fast learners to serve as peer-coach.	Science Coordinator Science Teachers	School Year 2022	Personal	Teachers promoted peer tutoring as a form of group learning.
Physiologically prepare the learners for the class activities to support them actively.	<u>WARM-UP ACTIVITIES & CONCENTRATION APPROACH</u> - Provide physical movement through warm-up activity. - Introduce game activities as energizing lessons. - Provide interactive lessons or assignments.	Science Coordinator Science Teachers	School Year 2022	Personal	Learners used online sources/internet and references books platform which encourages both visual and individual learning. Reduce and Minimize the anxiety of learners in taking a test.

Sub-Problem No. 5. How acceptable is the proposed intervention measures as assessed by the School Administrators and Teachers?

Table 19 depicts the acceptability of the proposed intervention measures as assessed by the respondents.

Table 19
Acceptability of the Proposed Intervention Measures

Criteria	School Admins		Teachers		Composite		Rank
	WM	**VI**	**WM**	**VI**	**WM**	**VI**	
1. The proposed intervention measures could be program and adopted by the institution.	4.07	A	4.19	A	4.13	A	2
2. The overall action of the proposed intervention measure can be made clear to all concerned.	4.14	A	4.19	A	4.17	A	1
3. The proposed intervention measure will benefit the institution.	3.97	A	4.11	A	4.04	A	5
4. The proposed intervention measure is workable and operative.	4.02	A	4.07	A	4.05	A	4
5. The proposed intervention measure is flexible enough to adapt to different conditions for which it is intended.	4.09	A	4.07	A	4.08	A	3
Overall Mean	**4.06**	**A**	**4.13**	**A**	**4.09**	**A**	

Legend:

Option	Equivalent	Verbal Interpretation	Symbol
5	4.20 – 5.00	Very Acceptable	VA
4	3.40 – 4.19	Acceptable	A
3	2.60 – 3.39	Moderately Acceptable	MA
2	1.80 – 2.59	Inadequately Acceptable	IA
1	1.00 – 1.79	Not Acceptable	NA

As depicted in the data, all the items were assessed by the respondents as acceptable, these are: the overall action of proposed intervention measure can be made clear to all concerned (WM=4.17) rank 1; the proposed intervention measures could be program and adopted by the institution (WM=4.13) rank 2; the proposed intervention measure is flexible enough to adapt to different conditions for which it is intended (WM=4.08) rank 3; the proposed intervention measure is workable and operative (WM=4.05) rank 4; and the proposed intervention measure will benefit the institution (WM=4.04) rank 5.

Generally, the school administrators and teachers assessed the proposed intervention measures as acceptable evidenced by the overall mean value of 4.09.

SUMMARY

Based on the data gathered, the following findings were drawn:

1.   On the preferred learning styles of BSEd-Sciences learners

All variables for the preferred learning style of BSEd-Sciences learners were assessed by the respondents as agreeing: attitudes or emotions (WM=4.04), psychological preferences

(WM=4.00), sociological preferences (WM=3.95), physiological preferences (WM=3.90) and environmental preferences (WM=3.81) as supported by the overall mean value of 3.94 verbally interpreted likewise.

2.   On the study habits of BSEd-Sciences learners

All variables were assessed by the respondents as often, these are motivation (WM=4.06), remembering (WM=3.98), listening and taking notes (WM=3.92), studying a chapter (WM=3.87), concentration (WM=3.82), and taking tests (WM=3.81) as evidenced by the overall mean value of 3.91.

3.   On the significant relationship

3.1.   *Environmental Preference vs. Study Habits.* The computed correlation value of .728 is higher than the critical value of .497 at a five percent level of significance with 14 degrees of freedom. It signifies that there is a significant relationship that led to rejecting the hypothesis. Furthermore, there is a high correlation, marked relationship between the study habits of BSEd-Sciences learners and preferred learning styles as to environmental preferences.

3.2.   *Attitudes or Emotional Preferences vs. Study Habits*. The computed correlation value of .505 is greater than the critical value of .497 at a five percent level of significance with 14 degrees of freedom. It signifies that there is a significant relationship that led to rejecting the hypothesis. Furthermore, there is a moderate correlation, the substantial relationship between the study habits of BSEd-Sciences learners and preferred learning styles as to attitudes or emotional preferences.

3.3.   *Sociological Preferences vs. Study Habits*. The computed correlation value of .179 is lower than the critical value of .497 at a five percent level of significance with 14 degrees of freedom. It signifies that there is no significant relationship that led to accepting the hypothesis. Furthermore, there is a slight correlation, almost negligible relationship between the study habits of BSEd-Sciences learners and preferred learning styles as to sociological preferences.

3.4.   *Physiological Preferences vs. Study Habits.* The computed correlation value of .317 is below the critical value of .497 at a five percent level of significance with 14 degrees of freedom. It signifies that there is no significant relationship that led to accepting the hypothesis. Furthermore, there is a slight correlation, but then a small relationship between the study habits of BSEd-Sciences learners and preferred learning styles as to physiological preferences.

3.5.   *Psychological Preferences vs. Study Habits*. The computed correlation value of .039 is smaller than the critical value of .497 at a five percent level of significance with 14 degrees of freedom. It signifies that there is no significant relationship that led to accepting the hypothesis. Furthermore, there is a slight correlation, but almost negligible between the study habits of BSEd-Sciences learners and preferred learning styles as to psychological preferences.

4.   On the proposed intervention measures

The proposed intervention measures help to improve and enhance the scientific skills of learners acquire for better quality education.

5.   *On the acceptability of the proposed intervention*

The school administrators and teachers assessed the proposed intervention measures as acceptable evidenced by the overall mean value of 4.09.

CONCLUSIONS

Based on the findings, the researcher arrived at the following conclusions:

1.   The respondents agreed on the preferred learning styles of BSEd-Sciences learners.

2.   The respondents rated often the study habits of BSEd-Sciences learners.

3.   There is a high correlation, marked relationship between the study habits of BSEd-Sciences learners and preferred learning styles as to environmental preferences, moderate correlation, the substantial relationship between the study habits of BSEd-Sciences learners and preferred learning styles as to attitudes or emotional preferences, slight correlation, the almost negligible relationship between the study habits of BSEd-Sciences learners and preferred learning styles as to sociological preferences, slight correlation, but the small relationship between the study habits of BSEd-Sciences learners and preferred learning styles as to physiological preferences, and slight correlation, but almost negligible between the study habits of BSEd-Sciences learners and preferred learning styles as to psychological preferences.

4.   The proposed intervention measures were formulated to improve learners' study habits and to increase their performance in Science.

5.   The proposed intervention measures were acceptable to the respondents.

RECOMMENDATIONS

Based on the conclusions, the researcher offers the following recommendations:

1.   Teachers should accommodate the unique learning styles of all learners to greatly increase the successful transfer of information to improve the skills in Science.

2.   There is a continued need for teachers to deliver quality education and be conscientious and understanding of the learning styles and habits of their students to deliver an effective teaching-learning process in increasing the performance.

3.   More pieces of training for teachers should be provided to fully understand the individual differences of their students. They need to understand and appreciate different learning styles and use a variety of teaching methods in their classrooms respectively.

4.   The proposed intervention may be implemented with appropriate manpower, financial resources, and with the use of assessment and evaluation devices.

5.   Any future research using the instruments used herein should attempt to further analyze the other factors that affect the performance of the students in Science.

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FACULTY WEBINAR ENGAGEMENT TOWARDS TO GROWTH AND LEARNING EXECUTION TO BUSINESS STUDENTS IN NEW NORMAL

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INTRODUCTION

The shift to remote online teaching and learning has led to proactive measures, even before COVID-19. The College of Business and Public Administration understands that the circumstances surrounding the current situation with COVID-19 are unique, and we are flexible as possible in working with college to meet the needs of students and faculty. The college was guided by achieving three goals, such as: provide support for faculty as they prepare for alternative instructional delivery systems, ensure that students are provided sufficient opportunities to demonstrate the learning outcomes listed in the course syllabi with limited period, and prevent any delay is student progress toward graduation. These three goals focus with the three main stakeholders of the college, namely: faculty members, lower year students and graduating students.

To address the challenge, the college has encouraged the faculty members to conduct and participate webinars that will engage and prepare for the transition of remote learning. During School Yearend 2019-2020 dated July 2-August 13, 2020, amidst of the Corona Virus (COVID-19), there is a call to pursue classes in the higher educational institutions, to address that call, the CBPA take the challenges of the pandemic. The theme was "Moving Forward under the New Normal: Opportunities & Challenges during the Pandemic". We have conducted inventories of capabilities of the faculty members to know what is lacking and excess to them. Majority of the faculty members have initiative to participate in the webinars conducted by different organizations and institutions. For those who are blessed with capacity and talents were ask to share to make also other capable and competent in this new normal with the hashtag "No one left behind" and "we learn as one".

In realization, this study sought to determine the effectiveness of faculty webinar engagement to growth and learning execution to business students.

MATERIALS AND METHODS

a.   The participants of the research are thirty-four (34) faculty members and one thousand one hundred ninety-two (1,192) students of the College of Business and Public Administration in EARIST, Nagtahan, Manila.

b.   Administered and retrieved survey questionnaire from the respondents through Google survey form using random sampling during Second Semester School Year 2020-2021. Collected, treated, analyzed, interpreted, and presented the data to answer to the sub problem of the study. The data were treated and analysed using statistical tools such as: percentage, weighted mean, t-test and Pearson correlation.

RESULTS AND DISCUSSION

1.   The Extent of Faculty Engagement in Webinar

Table 1
Faculty Webinar Engagement in Objectives

Indicator	WM	VI	Rank
1. Produce competent faculty in handling online class with the use of Google products knowledgeable to the laws pertains to the information act with prudence to self-care.	4.45	HE	2
2. Raise faculty towards the delivery of quality education under new normal.	4.40	HE	3
3. Empower faculty to lead, perform and strategies quality education.	4.55	HE	1
Overall Weighted Mean	**4.47**	**HE**	

Legend:

Scale	Range	Verbal Interpretation	Symbol
5	4.20 – 5.00	Highly Engaged	HE
4	3.40 – 4.19	Engaged	E
3	2.60 – 3.39	Moderately Engaged	ME
2	1.80 – 2.59	Least Engaged	LE
1	1.00 - 1.79	Not Engaged	NE

Table 1 presents the faculty webinar engagement in objectives rated as Highly engaged with overall weighted mean of 4.47. All items rated as Highly Engaged, such as: Empower faculty to lead, perform and strategies quality education with weighted mean of 4.55 as rank 1; Produce competent faculty in handling online class with the use of Google products knowledgeable to the laws pertains to the information act with prudence to self-care with weighted mean of 4.45 as rank 2. Raise faculty towards the delivery of quality education under new normal with weighted mean of 4.40 as rank 3.

It establishes that the college has highly considered the objectives of attending the webinar which would lead to the delivery of quality education under new normal. Relatively, Allen, Gregory, Lun and Pianta (2019) confirmed that faculty who had attended the webinar engagement as to objectives have higher self-efficacy primarily attributed to enhance the knowledge and self-regulated learning.

Table 2
Faculty Webinar Engagement in Topic and Content

Indicator	WM	VI	Rank
1. Introduction to Flexible Course Plan with Module Writing	4.50	HE	3.5
2. Exploring Google Classroom	4.45	HE	5
3. Exploring Google Forms and Google Sheet	4.50	HE	3.5
4. Self-Care for the New Normal	4.55	HE	2
5. Data Privacy Law and Copyright Law	4.60	HE	1
Overall Weighted Mean	**4.52**	**HE**	

Table 2 reflects the faculty webinar engagement in topic and content rated as Highly Engaged with overall weighted mean of 4.52. All topic and content rated as Highly Engaged, namely: data privacy law and copyright law with weighted mean of 4.60 as rank 1; self-care for the new normal with weighted mean of 4.55 as rank 2; exploring Google forms and Google sheet, and introduction to flexible course plan with module writing with both weighted mean of 4.50 as rank 3 and 4; and exploring Google classroom with weighted mean of 4.45 as rank 5.

It shows the faculty was highly interested in all topics/contents of the webinar conducted by the college during new normal. Hammond and Waltemeyer (2020) concluded that the faculty and administrators were expanded the participation opportunities for learning community practitioners and mentoring online faculty under new normal.

Table 3
Faculty Webinar Engagement in Usefulness

Indicator		WM	VI	Rank
1.	Provide good service to the public as mandated by the Commission on Higher Education together with the Civil Service Commission bended by our promises in the service contract with the Republic of the Philippines.	4.30	HE	3
2.	Address that call, the faculty development program has been designed to take the challenges in the pandemic.	4.40	HE	2
3.	Make also other capable and competent in this new normal with the hush tag "No one left behind" and "we learn as one".	4.55	HE	1
Overall Weighted Mean		**4.42**	**HE**	

Table 4 portrays the faculty webinar engagement in usefulness rated as Highly Engaged with overall weighted mean of 4.42. All indicators rated as Highly Engaged, these are: make also other capable and competent in this new normal with the hush tag "No one left behind" and "we learn as one" with weighted mean of 4.55 as rank 1; address that call, the faculty development program has been designed to take the challenges in the pandemic with weighted mean of 4.40 as rank 2; and provide good service to the public as mandated by the Commission on Higher Education together with the Civil Service Commission bended by our promises in the service contract with the Republic of the Philippines with weighted mean of 4.30 as rank 3.

It proves that the webinars have highly served the purpose by providing better solutions for faculty to take challenges under new normal. Relatively, Toquero and Talindong (2020), confirmed that schools around the world forced to find new ways of delivering education. Engaging webinars to educate the educators have observed for teaching issues particularly on usefulness.

2. Growth and Learning Execution to Business Students

Table 4 manifests the assessments of faculty members and business students on the growth and learning execution to business students as to knowledge of subject rated as Outstanding with overall weighted mean of 4.38. Four (4) items rated as Outstanding, such as: demonstrates up-to-date knowledge and/or awareness on current trends and issues of the subject with composite weighted mean of 4.55 as rank 1; draws and share information on the state on the art of theory and practice in his/her discipline, and integrates subject to practical circumstances and learning intents/purposes of students with both composite weighted mean of 4.47 as rank 2 and 3; demonstrates mastery of the subject matter (explain the subject matter without relying solely on the prescribed textbook) with composite weighted mean of 4.40 as

rank 4. One (1) item rated as Very Satisfactory which is demonstrates up-to-date knowledge and/or awareness on current trends and issues of the subject with composite weighted mean of 4.04 as rank 5.

Table 4
Growth and Learning Execution to Business Students
As to Knowledge of Subject

Indicator	Faculty Members		Business Students		Composite		Rank
	WM	VI	WM	VI	WM	VI	
1. Demonstrates mastery of the subject matter (explain the subject matter without relying solely on the prescribed textbook).	4.54	O	4.26	O	4.40	O	4
2. Draws and share information on the state on the art of theory and practice in his/her discipline.	4.67	O	4.26	O	4.47	O	2.5
3. Integrates subject to practical circumstances and learning intents/purposes of students.	4.63	O	4.30	O	4.47	O	2.5
4. Explains the relevance of present topics to the previous lessons, and relates the subject matter to relevant current issues and/or daily life activities.	4.04	VS	4.03	VS	4.04	VS	5
5. Demonstrates up-to-date knowledge and/or awareness on current trends and issues of the subject.	4.67	O	4.43	O	4.55	O	1
Overall Weighted Mean	4.61	O	4.26	O	4.38	O	

Legend:

Scale	Range	Verbal Interpretation	Symbol
5	4.20 – 5.00	Outstanding	O
4	3.40 – 4.19	Very Satisfactory	VS
3	2.60 – 3.39	Satisfactory	S
2	1.80 – 2.59	Fair	F
1	1.00 - 1.79	Poor	P

It is evident that the faculty members have highly prepared in knowledge and understanding as they transitioned to the remote learning. In response, Hew, K. F. et al. (2020) emphasized that in the new normal in education, professors must engage students in the learning process by employing interactive discussion and updated information on the subject content.

Table 5 manifests the assessments of faculty members and business students on the growth and learning execution to business students as to teaching for independent learning rated as Very Satisfactory with overall weighted mean of 4.04. All items rated as Very Satisfactory, these are: allows students to think independently and make their own decisions and holding them accountable for their performance based largely on their success in executing decisions, and encourages students to learn beyond what is required and help/guide the students how to apply the concepts learned with both composite weighted mean of 4.07 as rank 1 and 2; creates teaching strategies that allow students to practice using concepts they need to understand (interactive discussion) with composite weighted mean of 4.03 as rank 3; allows students to create their own course with objectives and realistically defined student-professor rules and make them accountable for their performance with composite weighted mean of 4.02 as rank 4; and enhances student self-esteem and/or gives due recognition to students' performance/potentials with composite weighted mean of 4.01 as rank 1.

Table 5
Growth and Learning Execution to Business Students
As to Teaching for Independent Learning

Indicator	Faculty Members		Business Students		Composite		Rank
	WM	VI	WM	VI	WM	VI	
1. Creates teaching strategies that allow students to practice using concepts they need to understand (interactive discussion).	4.00	VS	4.06	VS	4.03	VS	3
2. Enhances student self-esteem and/or gives due recognition to students' performance/potentials.	4.00	VS	4.02	VS	4.01	VS	5
3. Allows students to create their own course with objectives and realistically defined student-professor rules and make them accountable for their performance.	4.00	VS	4.04	VS	4.02	VS	4
4. Allows students to think independently and make their own decisions and holding them accountable for their performance based largely on their success in executing decisions.	4.08	VS	4.05	VS	4.07	VS	1.5
5. Encourages students to learn beyond what is required and help/guide the students how to apply the concepts learned.	4.02	VS	4.11	VS	4.07	VS	1.5
Overall Weighted Mean	**4.02**	VS	**4.06**	VS	**4.04**	VS	

It observes the faculty members have able to consider the students' independent learning. Basilaia and Kvavadze (2020) concluded that online education would be useful in the future. Therefore, learners will work more independently, which will have the benefit of getting new skills, especially in the case of students with special needs. In the same way, the qualification of the teachers was affected positively by moving their assignment to the new way of the lessons and becoming more learning facilitators.

Table 6
Growth and Learning Execution to Business Students As to Management of Learning

Indicator	Faculty Members		Business Students		Composite		Rank
	WM	VI	WM	VI	WM	VI	
1. Assumes roles as facilitator, resource person, coach, inquisitor, integrator, referee in drawing students to contribute to knowledge and understanding of the concepts at hands.	4.04	VS	4.06	VS	4.05	VS	1.33
2. Designs and implements learning conditions and experience that promotes healthy exchange and/or confrontations.	4.07	VS	4.02	VS	4.05	VS	1.33
3. Structures/re-structures learning and teaching–learning context to enhance attainment of collective learning objectives.	4.03	VS	4.06	VS	4.05	VS	1.33
4. Use of Instructional Materials (audio/video materials: fieldtrips, film showing, computer aided instruction and etc.) to reinforces learning processes.	4.04	VS	4.02	VS	4.03	VS	4
Overall Weighted Mean	**4.05**	**VS**	**4.04**	**VS**	**4.04**	**VS**	

Table 6 depicts that the assessments of faculty members and business students on the growth and learning execution to business students as to management of learning rated as Very Satisfactory with overall weighted mean of 4.04. All items rated as Very Satisfactory, these are: assumes roles as facilitator, resource person, coach, inquisitor, integrator, referee in drawing students to contribute to knowledge and understanding of the concepts at hands, designs and implements learning conditions and experience that promotes healthy exchange and/or confrontations, and structures/re-structures learning and teaching–learning context to enhance attainment of collective learning objectives with composite weighted mean of 4.05 as rank 1, 2, and 3; and use of instructional materials ((audio/video materials: fieldtrips, film showing, computer aided instruction and etc.) to reinforces learning processes with composite weighted mean of 4.03 as rank 4.

Clearly, the faculty members have able to be flexible in line with remote learning, (Hodges et al. (2020) found out that many faculty members have had to improvise quick online learning solutions.

3.   Significant Difference on Growth and Learning Execution to Business Students

Table 7
Comparative Assessment on Growth and Learning to Business Students

Indicator	Faculty Members		Business Students		t-value	Critical value	Interpretation	Decision
	WM	SD	WM	SD				
1. Knowledge of Subject	4.61	0.072	4.26	0.021	0.16613	1.645	Not Significant	Accept Ho
2. Teaching for Independent Learning	4.02	0.001	4.06	0.001	0.02453	1.645	Not Significant	Accept Ho
3. Management of Learning	4.05	0.0003	4.04	0.0005	0.00351	1.645	Not Significant	Accept Ho

Legend: 1224 degree of freedom at 0.05 level of significance

As depicted in Table 7, the computed t-values are as follows: knowledge of subject with 0.16613; teaching for independent learning with 0.02453; and management of learning with 0.00351 were all lower than the critical value of 1.645 with 1224 degree of freedom at 0.05 level of significance. Hence, there is no significant difference on the growth and learning execution to business students as assessed by faculty members and business students. Therefore, the hypothesis is accepted.

4.   Significant Relationship Between Faculty Webinar Engagement and Growth and Learning Execution to Business Students

As manifested in Table 8, the computed r-value is 0.68 which is Strong Correlation. Hence, there is significant relationship between the faculty webinar engagement and growth and learning to business students. Therefore, the hypothesis is rejected.

Table 8
Comparative Relationship Between Faculty Webinar Engagement and
Growth and Learning to Business Students

r-value	Symbol	Interpretation	Decision
0.68	SC	Significant	Reject Ho

Legend:

Range	*Verbal Interpretation*	*Symbol*
1.00	*Perfect Correlation*	*(PC)*
0.80 – 0.99	*Very Strong Correlation*	*(VSC)*
0.60 – 0.79	*Strong Correlation*	*(SC)*
0.40 – 0.59	*Moderate Correlation*	*(MC)*
0.20 – 0.39	*Weak Correlation*	*(WC)*
0.01 – 0.19	*Negligible Correlation*	*(NC)*

CONCLUSION

In view of the foregoing findings, the following conclusions are made:

1. The faculty webinar engagement on objectives, topic and contents and usefulness found highly engaged.

2. The growth and learning execution on knowledge of subject found Outstanding, while teaching for independent learning and management of learning found Very Satisfactory only.

3. Both faculty members and business students have parallel assessment on growth and learning execution to business students.

4. Faculty webinar engagement have significantly influenced the growth and learning execution to business students.

RECOMMENDATIONS

Based on the findings and conclusion the following recommendations are drawn:

1. The college dean, always practice conducting an assessment in order to identify the right training needs of the faculty members; consistently align with objectives, topic and contents and usefulness of webinar engagement especially this new normal; and continue to validate the training effectiveness to the students' evaluation to deliver academic excellence.

2. Program chairs, update the course syllabi and consider the trends particularly the teaching for independent learning and management of learning that can also be reference for training enhancement for the next training period.

3. Faculty members explore and expose in different webinars both internal and external in order to be competitive and updated to the current teaching methodologies and strategies that provides quality education to the students.

4. Students, show appreciation and recognition to the faculty members by positive feedbacks not only in the evaluation but even on and off class.

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CRISIS MANAGEMENT IMPLEMENTED IN SELECTED HOTELS
IN SUBIC, OLONGAPO CITY

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INTRODUCTION

Crisis or any untoward events can happen at any time and anywhere. And hotels are not exempted from the possibility of any crisis happening. Crisis management is the application of strategies designed to help an organization deal with a sudden and significant negative event. A crisis can occur as a result of an unpredictable event or as an unforeseeable consequence of some event that had been considered a potential risk. In either case, a crisis almost invariably requires that decision be made quickly to limit damage to the organization. For that reason, one of the first actions in crisis management planning is to identify an individual to serve as a crisis manager. The researcher conducts this study to assess the crisis management implemented in selected hotels in Subic, Olongapo City. The findings will give the researcher background knowledge and understanding of their specific duties and how to handle a situation when a crisis, merges. Subic Bay is also a popular destination for weekend visitors from Metro Manila. Attractions include several beaches, an underwater aquarium, jungle survival tours, and duty-free shopping centers. Destinations frequented by tourists in Subic include eco-tourism theme parks, the Ocean Adventure, Zoobic Safari, and the Pamulaklakin Nature Park which is home to the indigenous Aetas who once trained the U.S. Navy in jungle survival tactics. The researcher decided to conduct this study to know what are the crisis management being applied by the selected hotels in Subic, Olongapo City. Determine the effect of implementation and know as well the problems encountered and be able to come up with acceptable suggestions.

METHODOLOGY

This study utilized the descriptive research method. In order to gather all responses of the respondents, the researchers used survey questionnaires and their focus on the collection and analysis of the research. The study applied the descriptive method of the research which is more structured and tries to find answers to certain market behavior. The researchers want to learn the characteristics of a defined market group. This research method can be used to find information on pretty much anything about business; competitors, market trends, and environmental issues. This type of research uses scientific methods to collect data (Calderon, 2010)

The respondent of the study were 100 composed of hotel employees. Purposive sampling was used in the study. Purposive Sample also referred to as a judgmental or expert sample, is a type of non-probability sample. The main objective of a purposive sample is to produce a sample that can be logically assumed to be representative of the population. The researcher used purposive sampling is the deliberate choice of an informant due to the qualities the informant possesses. The researchers decide what needs to be known and set out to find people who can and are willing to provide the information by a venture of knowledge or experience (Babbie, E. 2009).

RESULTS AND DISCUSSION

Sub-problem No. 1. How do hotel employees assess the Crisis Management implemented in selected hotels in Subic, Olongapo City in terms of pre-crisis, crisis response, and post-crisis?

Table 1
Assessment on Pre-crisis

CRITERIA	Subic Bay Peninsular's Employees		Subic Bay Venezias Employees		Composite Weighted Mean		Rank
	WM	VI	WM	VI	WM	VI	
1. Crisis management plan that is updated at least annually	4.36	HI	3.78	I	4.07	I	1
2. Designated crisis management team	4.34	HI	3.72	I	4.03	I	2
3. Conduct exercises to test the plans and teams at least annually.	4.46	HI	3.54	I	4.00	I	3
4. Pre-draft of crisis Messages	4.30	HI	3.20	MI	3.75	I	4
Overall Weighted Mean	**4.37**	**HI**	**3.56**	**I**	**3.96**	**I**	

As manifested in table 1, on the assessment of the employees in Subic Bay Peninsular's on the crisis management implemented in Selected Hotels in Subic, Olongapo City in terms of pre-crisis management, they rated highly implemented all the variables which are "Crisis management plan that is updated at least annually," "Designated crisis management team," "Conduct exercises to test the plans and teams at least annually," and "Pre-draft of crisis messages" as affirmed by the weighted means of 4.36, 4.34, 4.46, and 4.30, respectively. Thus, resulted to an overall weighted mean of 4.37 interpreted as highly implemented.

On the assessment of the employees from Subic Bay Venezia's under the same criteria they rated implemented the variables 1, 2, and 4 which are "Crisis management plan that is updated at least annually," "Designated crisis management team," and "Conduct exercises to test the plans and teams at least annually" as affirmed by their respective weighted means of 3.78, 3.72, and 3.54. However, a moderately implemented assessment in variable 4 states that "pre-draft of crisis messages" as confirmed by the weighted mean of 3.20. Hence, resulting to an overall weighted mean of 4.56 interpreted as implemented.

As a whole, the assessment of employees in Subic Bay Peninsular's and Venezia's in Subic Bay, Olongapo City on the crisis management implemented in terms of pre-crisis management, rank no. 1 is "crisis management plan that is updated at least annually" was rated as implemented as confirmed by the composite weighted mean of 4.07. Rank no. 2 is "designated crisis management team" was rated as implemented as affirmed by the composite weighted mean of 4.03. Rank no. 3 is "conduct exercises to test the plans and teams at least annually" was rated as implemented as strengthened by the composite weighted mean of 4.00. Rank no. 4 is "pre-draft of crisis messages" was rated as implemented as reinforced by the composite weighted mean of 3.75.

This affirms that the pre-crisis management in Subic Bay Peninsula and Venezia, in Subic Bay, Olongapo City were implemented as assessed by the employees, strengthened by the overall composite weighted mean of 3.96.

Table 2
Assessment on Crisis-response

CRITERIA	Subic Bay Peninsular's Employees		Subic Bay Venezias Employees		Composite Weighted Mean		Rank
	WM	VI	WM	VI	WM	VI	
1. They are quick and try to have an initial response within the first hour.	4.48	HI	4.16	I	4.32	HI	1
2. Be accurate by carefully checking all facts relative to the situation/crisis.	4.40	HI	3.84	I	4.12	I	6
3. Consistent by keeping spokespeople informed of crisis events and key message points.	4.40	HI	3.62	I	4.01	I	7
4. Making public safety the number one priority of all staff.	4.36	HI	4.04	I	4.20	HI	3
5. Use all of the available communication channels including social media, websites, the internet, and mass notification system.	4.48	HI	3.98	I	4.23	HI	2
6. Provide some expression of concern/sympathy for victims to lessen the effect of the staff.	4.48	HI	3.82	I	4.15	I	4
7. Ready to provide stress and trauma counseling to victims of crisis and their families, including employees.	4.34	HI	3.92	I	4.13	I	5
Overall Weighted Mean	**4.42**	**HI**	**3.91**	**I**	**4.17**	**I**	

As presented in the table 2, on the assessment of the employees in Subic Bay Peninsular's on the Crisis Management implemented in selected hotels in Subic, Olongapo City in terms of crisis response management, they rated all the variables presented as highly implemented which are "They are quick and try to have initial response within the first hour," "Be accurate by carefully checking all facts relative to the situation/crisis," "Consistent by keeping spokespeople informed of crisis events and key message point," "Making public safety the number one priority of all staff," "Use all of the available communication channels including the social media, web sites, internet and mass notification system," "Provide some expression of concern/sympathy for victims to lessen the effect of the staffs," and "Ready to provide stress and trauma counselling to victims of crisis and their families, including employees" as affirmed by their respective weighted mean of 4.48, 4.40, 4.40, 4.36, 4.48, 4.48, and 4.34. Thus, resulted to an overall weighted mean of 4.42 for interpreted highly implemented.

On the assessment of the employees in Subic Bay Venizia on the crisis management implemented in selected hotels in Subic, Olongapo City in terms of crisis response management, they rated all the variables presented implemented which are "They are quick and try to have an initial response within the first hour," "Be accurate by carefully checking all facts relative to the situation/crisis," "Consistent by keeping spokespeople informed of crisis events and key message point," "Making public safety the number one priority of all staff," "Use all of the available communication channels including the social media, web sites, internet, and mass notification system," "Provide some expression of concern/sympathy for victims to lessen the effect of the staffs," and "Ready to provide stress and trauma counseling to victims of crisis and their families, including employees" as affirmed by their respective weighted mean of 4.16, 3.84, 3.62, 4.04, 3.98, 3.82, and 3.92. Thus, resulted to an overall weighted mean of 3.91 interpreted implemented.

Generally, the assessment of employees in Subic Bay Peninsular's and Subic Bay Venezia's in Olongapo City on the crisis management implemented in terms of crisis response management, rank no. 1 is "they are quick and try to have an initial response within the first hour" was rated as highly implemented as confirmed by the composite weighted mean of 4.32. Rank no. 2 is "use all of the available communication channels including the social media, web sites, internet, and mass notification system" was rated as highly implemented as affirmed by the composite weighted mean of 4.23. Rank no. 3 is "making public safety the number one priority of all staff" was rated highly implemented as strengthened by the composite weighted mean of 4.20. Rank no. 4 is "provide some expression of concern/sympathy for victims to lessen the effect of the staffs" was rated as implemented as reinforced by the composite weighted mean of 4.15. Rank no. 5 is "ready to provide stress and trauma counseling to victims of crisis and their families, including employees" rated as implemented as evidenced by the composite weighted mean of 4.13. Rank no. 6 is "be accurate by carefully checking all facts relative to the situation/crisis" was rated as implemented as reinforced by the composite weighted mean of 4.12. Rank no. 7 is "consistent by keeping spokespeople informed of crisis events and key message point" rated implemented as evidenced by the composite weighted mean of 4.01.

This shows that the crisis response management in Subic Bay Peninsula and Subic Bay Venezia, in Olongapo City was implemented as assessed by the employees as strengthened by the overall composite weighted mean of 4.17.

Table 3
Assessment on Post-crisis management

CRITERIA	Subic Bay Peninsular's Employees		Subic Bay Venezias Employees		Composite Weighted Mean		Rank
	WM	VI	WM	VI	WM	VI	
1. They deliver all information as promised to stakeholders as soon as that information is known.	4.34	HI	3.80	I	4.07	I	1
2. They keep stakeholders updated on the progression of recovery efforts including any corrective measures being taken and the progress of investigating.	4.32	HI	3.70	I	4.01	I	3
3. They analyze the crisis management effort for the lesson and integrate those lessons into the organization's crisis management system.	4.26	HI	3.66	I	3.96	I	4
4. Consult with the victims and their families to determine the organization's role in any anniversary events or memorials.	4.56	HI	3.48	I	4.02	I	2
Overall Weighted Mean	**4.37**	**HI**	**3.66**	**I**	**4.06**	**I**	

As stated in table 3, on the assessment of the employees in Subic Bay Peninsular's on the crisis management implemented in selected hotels in Subic, Olongapo City in terms of post-crisis management, they rated highly implemented all the variables which are "They deliver all information as promised to stakeholders as soon as that information is known," "They keep stakeholders updated on the progression of recovery efforts including any corrective measures being taken and the progress of investigating," "They analyze the crisis management effort for the lesson and integrate those lessons into the organization's crisis management system," and "Consult within the victims and their families to determine the organization's role in any anniversary events or memorials" as affirmed by their respective weighted mean of 4.34, 4.32,

4.26, and 4.56. Thus, resulted to an overall weighted mean of 4.37 interpreted as highly implemented.

Meanwhile, the employees from Subic Bay Venezia's under the same criteria they rated implemented all the variables presented which are "They deliver all information as promised to stakeholders as soon as that information is known," "They keep stakeholders updated on the progression of recovery efforts including any corrective measures being taken and the progress of investigating," "They analyze the crisis management effort for the lesson and integrate those lessons into the organization's crisis management system," and "Consult within the victims and their families to determine the organization's role in any anniversary events or memorials" as sustained by their respective weighted mean of 3.80, 3.70, 3.66, and 3.48. Hence, resulting to an overall weighted mean of 3.66 interpreted as implemented.

As a whole, the assessment of employees in Subic Bay Peninsular's and Subic Bay Venezia's in Olongapo City in Crisis Management in terms of post-crisis management, rank no. 1 is "They deliver all information as promised to stakeholders as soon as that information is known" was rated as implemented as confirmed by the composite weighted mean of 4.07. Rank no. 2 is "They keep stakeholders updated on the progression of recovery efforts including any corrective measures being taken and the progress of investigating" was rated implemented as affirmed by the composite weighted mean of 4.02. Rank no. 3 is "They analyze the crisis management effort for the lesson and integrate those lessons into the organization's crisis management system" was rated as implemented as strengthened by the composite weighted mean of 4.01. Rank no. 4 is "Consult within the victims and their families to determine the organization's role in any anniversary events or memorials" was rated as implemented as reinforced by the composite weighted mean of 3.96.

This manifests that the post-crisis management in Subic Bay Peninsula and Subic Bay Venezia, in Olongapo City was implemented as assessed by the employees as strengthened by the overall composite weighted mean of 4.02.

Table 4
Summary Table on the Assessment of Respondents in Crisis Management implemented in selected Hotels in Subic, Olongapo City

CRITERIA	Subic Bay Peninsular's Employees		Subic Bay Venezias Employees		Composite Weighted Mean		Rank
	WM	VI	WM	VI	WM	VI	
1. Pre-crisis Management	4.37	HI	3.56	I	3.96	I	3
2. Crisis response	4.42	HI	3.91	I	4.17	I	1
3. Post-crisis Management	4.37	HI	3.66	I	4.02	I	2
Overall Weighted Mean	**4.39**	**HI**	**3.71**	**I**	**4.05**	**I**	

Looking at that summary table 4, on the assessment of the employees in Subic Bay Peninsular's on the crisis management implemented in selected hotels in Subic, Olongapo City, they rated all the variables as highly implemented "pre-crisis management," "crisis response management," and "post-crisis management" with their respective weighted mean of 4.37, 4.42, and 4.37. Thus, resulting to an overall weighted mean of 4.39 interpreted as highly implemented.

However, the employees from Subic Bay Venezia's rated implemented the "pre-crisis management," "crisis-response management," and "post-crisis management" supported by their respective weighted means of 3.56, 3.91, and 3.66. Hence, resulting to an overall weighted mean of 3.71 interpreted as implemented.

Generally, the assessment of employees in Subic Bay Peninsular's and Subic Bay Venezia's in Olongapo City in crisis management implemented, rank no. 1 is "crisis response management" was rated implemented as confirmed by the composite weighted mean of 4.17. Rank 2 is "post-crisis management" was rated as implemented as reinforced by the composite weighted mean of 4.02. Rank 3 is "pre-crisis management" rated as implemented as reinforced by the composite weighted mean of 3.96.

This result affirms that the crisis management in selected hotels in Subic, Olongapo City implemented in terms pre-crisis, crisis response, and post-crisis of as sustained by the overall composite weighted mean of 4.05.

Sub-problem No. 2. Is there a significant difference between the assessments of the respondents using the above-mentioned variables?

Table 5
Results of Significant Difference

Respondents	Mean	Standard Deviation	t-ratio		
			Computed t-value	Decision	Verbal Interpretation
Subic Bay Peninsular	4.39	0.0289	3.7240	Reject Ho	Significant
Subic Bay Venezia	3.71	0.1803			

Degrees of Freedom = 98 Critical value at .05 = 1.985

As shown by the data in table 5, it could be observed on the results of the significant difference in the assessment of the employees in Subic Bay Peninsula and Subic Bay Venezia, in Olongapo City on crisis management, it obtained a computed t value of 3.7240 which is greater than the tabular value of 1.985 at five percent level of significance with 98 degrees of freedom and verbally interpreted significant. Hence, reject the null hypothesis.

Since we reject the null hypothesis, there is a strong indication that there is a significant difference on the assessment of the employees from Subic Bay Peninsula and Subic Bay Venezia, in Olongapo City on crisis management implemented in terms of pre-crisis management, crisis response management, and post-crisis management.

This signifies that the employees in Subic Bay Peninsula and employees in Subic Bay Venezia do not concur with their assessment on the crisis management implemented in Subic, Olongapo City in terms of pre-crisis management, crisis response management, and post-crisis management.

Sub-problem No. 3. What are the problems encountered by the respondents?

Table 6
Problems Encountered by the Respondents

CRITERIA	Subic Bay Peninsular's Employees		Subic Bay Venezias Employees		Composite Weighted Mean		Rank
	WM	VI	WM	VI	WM	VI	
1. There is no standby evacuation equipment for guests and employee.	4.26	HE	4.54	HE	4.40	HE	1
2. There is no permanent point for hotel employees to meet and organize.	4.24	HE	3.28	ME	3.76	E	6
3. Contingency plan in case crisis occurs in not pointed in a visible location.	4.42	HE	4.08	E	4.25	HE	5
4. The Systems of communication for reaching guests, employees, and emergency services organizations are not clear.	4.26	HE	4.32	HE	4.29	HE	3.5
5. The employees are not well prepared in a crisis situation.	4.14	E	4.44	HE	4.29	HE	3.5
6. There is no adequate communication with the local government.	4.28	HE	4.48	HE	4.38	HE	2
Overall Weighted Mean	**4.27**	**HE**	**4.19**	**E**	**4.23**	**HE**	

It could be gleaned that the employees in Subic Bay Peninsula and Subic Bay Venezia, in Olongapo City on crisis management, rank no. 1 is "There is no standby evacuation equipment for guests and employee" rated highly encountered as affirmed by the composite weighted mean of 4.40. Rank no. 2 is "There is no permanent point for hotel employees to meet and organize." rated highly encountered as confirmed by the composite weighted mean of 3.76. Rank no. 3 are "contingency plan in case crisis occurs in not pointed in a visible location" rated highly encountered as strengthened by the composite weighted mean of 4.25. Rank no. 4 is "the Systems of communication for reaching guests, employees and emergency services organizations are not clear" rated highly encountered as strengthened by the composite weighted mean of 4.29. Rank no. 5 is "The employees are not well prepared in a crisis situation" as reinforced by the composite weighted mean of 4.29. Rank no. 6 is "There is no adequate communication with the local government." rated encountered as backed up by the composite weighted mean of 4.38.

Generally, the employees in Subic Bay Peninsula and Subic Bay Venezia, in Olongapo City highly encountered problems in the implementation of crisis management in terms of pre-crisis management, crisis response management, and post-crisis management backed up by the overall weighted mean of 4.23.

CONCLUSIONS AND RECOMMENDATIONS

The following conclusions were drawn based on the findings of the study.

1. The pre-crisis management, crisis response management, post-crisis management are carried out was implemented in Subic Bay Peninsula and Subic Bay Venezia, in Olongapo City as assessed by the employees.

2. The employees in Subic Bay Peninsula and employees in Subic Bay Venezia do not concur with their assessment on the crisis management in Olongapo City in terms of pre-crisis management, crisis response management, and post-crisis management.

3. The employees in Subic Bay Peninsula and Subic Bay Venezia, in Olongapo City, have experienced some issues concerning the implementation of crisis management in terms of pre-crisis management, crisis response management, and post-crisis management.

After a thorough analysis of the conclusions, the researchers recommend that:

1. Continue the crisis management implemented and at the same time look for any new crisis management approach.

2. Their respective employee must be included in those people to be asked for crisis management dealings and protocols. Likewise, all hotel employees in Subic must have unified seminars and training on crisis management.

3. All identified problems encountered must be addressed immediately so that any possible effect of those identified problems may be avoided.

4. A parallel study may be conducted using the same variables but different respondents and selling to validate the reliability of the findings.

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HUMAN RESOURCE OUTSOURCING OF RETAIL BUSINESS ESTABLISHMENT: A COMPARATIVE OF BEST PRACTICES

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INTRODUCTION

Human resource is very important department in organization. The concept of human resource outsourcing becomes the usual way of most of the businesses in recruiting new employees. Since, companies are realizing the important duties of human resource outsourcing like hiring, training and retaining their employees. Today, HR departments have many more duties to handle, and as these duties grew, so has the size on the standard HR department grown. It is really important to know the most common Human Resource Outsourcing functions/practices are Background Screening, Risk Management, Temporary Staffing, Employee Assistance or Counselling, Health Care Benefits, Retirement Planning, Performance Management. With the increasing global competition, organizations are looking outsourcing as a means of gaining a comparative advantage over other competitors. Outsourcing is thought to benefit a business by allowing an organization divert its energy away from non-core activities of the business true area of expertise and instead of that concentrating more energy and focus on what it can does well in order to differentiate itself from other competitor (Bhushan et al., 2018). By outsourcing their non-core activities, organizations would be able to reduce their operating cost too. This is possible by heaping the benefits of a suppliers lower cost structure, which could result from economics of scale or other advantages associated with specialization available with the outsourcing service provider (Susomrith and Brown., 2013).

In today's world, the human resource outsourcing rapidly changing market dynamic and global competitive pressures have caused organization to spent more time focusing on their core business. It increases the industrialization of companies, employers and employees. It requires in human resourcing a trained professional to improve the company's service and operational efficiency. In western countries like United States, they spent a billion of money for revenue to employed the billions of people or employees. The small and medium average company typically uses the outsourcing. These includes payroll administration and recruitment. Human resource outsourcing rapidly growth in the Philippines, they find it more helpful for company. But there also have a problem or demerits of outsourcing like morale. This may lead to the employee's mind downfall and also lead to the working employees asking wasting money on outsourcing employees instead of giving out proper wages to the workforce. Loss of human factor is reduction of face-to-face interaction with employee's drawback of human resource outsourcing. And lack of in-house expertise if a new consultant is hired, there is always learning period for the employees.

Quality recruitment is one of the important characteristics of human resource. It is important to meet the goals and objectives in organization (Boxall et al., 2008). It is the basis for the company's successful or failure. Recruitment is also the most crucial decision making in hiring an employee. Quality recruitment gives the important information that helps the human resource to hire and train the new comer and regular employee. Recruiting the high-quality employees can be difficult but there is outsourcing, it lightens the burden for the human resource.

Issues and challenges are not exempted within organization. Human resource can define also a disadvantage for the employees are already in organization. They lose the opportunity to show their other skills and opportunity to work. Some employees are very private person. Many of them are afraid to reveal or to share their personal problems. And how the

human resource can avoid such conflicts if the employees are not sure the person can be trusted. Since the employees are not easily trust the others, so that it creates a concrete barrier between outsourcing employees and regular employees. A barrier from human resource outsourcing to employees. And they can't also boost the morale of every employees in the organization. Not all the human resource outsourcing is not wholehearted to their jobs, some of them, they do just only their job. No more no less. They don't have any concern if the employees lose their motivation to do their task. They don't want to interrupt the problems and lack of support for the employees to meet their satisfaction.

This study aims to determine and compare the best practices or key strengths of two Human Resource Outsourcing (HROs) using the evaluation of their outsourced employees. Using the common practices and specified indicators for every practice developed by the researcher, HROs are evaluated whether they implemented or not those practices. In addition, this research identified problems encountered by the employees of HROs. Moreover, the significant differences between the practices was computed. Finally, suggestions are listed for the improvement of practices of HRO.

METHODS

Descriptive research is used to obtain information concerning the current status of the phenomena to describe "what exists" with respect to variables or conditions in a situation. The methods involved range from the survey which describes the status quo, the correlation study which investigates the relationship between variables, to developmental studies which seek to determine changes over time. According to Edgar and Manz (2017), descriptive research aims to accurately and systematically describe a population, situation or phenomenon. It can answer what, when, where, when and how questions, but not why questions. To determine cause and effect, experimental research is required. Descriptive research methods use questionnaires and interviews to collect information about present trends, beliefs, public mind, their viewpoint and attitudes, their effects or development of new trends are described. Furthermore, the result will provide trends that are developing and basis for making decisions.

Population and Sampling

The convenience sampling procedure was perceived in the selection of the respondents since outsourced employees are foregone to answer the questionnaires. The emphasis of study is based on certain criteria set down by the researcher such as that the respondents within the population for the gathering of data. Edgar and Manz (2017) stated that convenience sampling is the most common form of non-probabilistic sampling, mostly because it is misused. Convenience sampling is a method of collecting samples by taking samples that are conveniently located around a location or Internet service. We have all seen studies that leverage students in the computer science classes. This is convenience sampling improperly used.

Table 1 presents the distribution of respondents as to job position. Respondents are dominated by staff (approximately 94%). This staff position is varying cashier, bagger, inventory control, payable and treasury staff, and butcher.

Table 1
Respondents as to Job Position

Indicator		Respondents	
		f	%
HRO A	Manager	2	6.4
	Staff	29	93.6
	Total	**31**	**100**
HRO B	Manager	2	6.9
	Staff	27	93.1
	Total	**29**	**100**

The distribution of respondents based on gender is tabulated in Table 2. For both HMOs, majority of the employees are female with common positions of either cashier, payable staff or treasury staff.

Table 2
Respondents as to Gender

Indicator		Respondents	
		f	%
HRO A	Male	10	32.3
	Female	21	67.7
	Total	**31**	**100**
HRO B	Male	13	44.8
	Female	16	55.2
	Total	**29**	**100**

Table 3 manifests the distribution of respondents as to age. The 6.7 % or age 36-40 years old are those in managerial positions. The majority (60%) of the staff hired by the two HMOs are ages ranging from 21- 25 years old or within the labor force by age. It is visible that there is no staff get hire at ages ranging from 36 y/o and above. This is in contrast to anti-age discrimination law under IRR of RA 10911 (https://www.dole.gov.ph/news/age-does-not-matter-in-employment-dole-issues-rules-on-anti-age-discrimination-in-employment/).

Table 3
Respondents as to Age

Indicator	Respondents	
	f	%
36 – 40 years old	4	6.7
31 – 35 years old	2	3.3
26 – 30 years old	15	25
21 – 25 years old	36	60
20 years old and below	3	5
Total	**60**	**100.00**

Length of service of respondents is illustrated in Table 4. Majority of them are working in the retail business establishments for 1 to 2 years. The 6.6 % are those managers who served for 7 years or longer. The employees (10%) who stayed at least 5 years are content on their current job. They are less confident to apply for a job with much more benefits and incentives; they wish get promoted and get permanent.

Table 4
Respondents as to Years of Service

Indicator	Respondents	
	f	%
9 – 10 years	2	3.3
7 – 8 years	2	3.3
5 – 6 years	6	10
3 – 4 years	17	28.3
1 – 2 years	27	45
Below 1 year	6	10
Total	**60**	**100**

Research Instruments

The self-made survey questionnaire in the form of a checklist was used in gathering data. The questionnaire is consisted of three parts. The Part I contained the demographic profile of the two groups of respondents. The Part II consisted of the assessment of Human Resource Outsourcing on outsourced HR functions. Finally, Part III composed of the problems encountered in Human Resource Outsourcing. This questionnaire was first presented to the research adviser. After comments are incorporated, it was submitted to panel of experts which composed of selected faculty members of CBA, EARIST- Manila and field recruitment officers for validation.

Statistical Treatment of Data

The actual response to a specific item/question in the questionnaire where the respondent check specific choice were tallied and served as frequency. Percentage was computed to identify majority/minority of the responses. The sum of the item values divided by the total number of items (weighted mean). It is computed average and its magnitude is influenced by every one of the item values in the set, and used to describe as set of quantitative data provided the item values that constitute the set are considerably concentrated. Formula are written and labeled as equation 1.

$$\bar{x}_w = \frac{\sum(f_1\bar{x}_1 + f_2\bar{x}_2 + \cdots f_N\bar{x}_N)}{N} \qquad \text{Equation 1}$$

Where: $\bar{x}_w$ = weighted mean
f_1 = frequency of first case
$\bar{x}_1$ = weight of first cell
f_2 = frequency of second cell
$\bar{x}_2$ = weight of second cell
N   = number of cases

Ranking was used to determine which of the practices obtain the highest and the lowest mean. The one-way analysis of variance is used to determine whether or not significant difference exists between the means of all practices of two HROs.

The data is interpreted by using the Five (5) Likert Scale Method, as the criterion which serves as the basis for the interpretation of the data. The concept of the boundary of the numerals and its interpretation were tabulated in Table 5a-b.

Table 5a
Scale for assessment on Practices of Human Resource Outsourcing

Scale	Range	Verbal Interpretation	Symbol
5	4.20 -5.00	Highly Implemented	HI
4	3.40 -4.19	Implemented	I
3	2.60 -3.39	Moderately Implemented	MI
2	1.80 -2.59	Least Implemented	LI
1	1.00 -1.79	Not Implemented	NI

Table 5b
Scale for assessment on Problems Encountered in the Human Resource Outsourcing

Scale	Range	Verbal Interpretation	Symbol
5	4.20 -5.00	Highly Encountered	HE
4	3.40 -4.19	Encountered	E
3	2.60 -3.39	Moderately Encountered	ME
2	1.80 -2.59	Least Encountered	LE
1	1.00 -1.79	Not Encountered	NE

RESULTS AND DISCUSSION

A.   *Human Resource Outsourcing (HRO) Best Practices*

The assessment of respondents on the human resource outsourcing as to background screening is illustrated in Table 6. For both HROs, the indicator obtained the highest weighted mean is "know when to consider criminal history". This implied that employers need thoughtfully consider how a criminal past may actually affect job results. The indicators under background screening of the two HROs obtained almost similar mean and ranking. The overall weighted means are interpreted as highly implemented (HI). This shown that background screening has put into practice in HR outsourcing. Screening job candidates has become an increasingly important step in the hiring process. It ensures in building good teams in the organization. This is related to the findings of, in which they affirmed that organization needs to search or gather adequate data pertaining to the employee's background. In addition, background investigation becomes standard procedure for many companies to prevent a variety of problem ranging from embezzlement and theft of merchandise to workplace violence (Bohlander and Shell, 2013).

Table 6
HRO as to Background Screening

Indicator	$\overline{x}_w$ HRO A	Rank	$\overline{x}_w$ HRO B	Rank
1. Look for relevant data in an employment background check.	4.42	5	4.35	5
2. Know when to consider criminal history. Employers need to thoughtfully consider how a criminal past may actually affect job results.	4.61	1	4.59	1
3. Discern patterns from background data. Look for patterns that show how an employee strives to succeed or how an employee displays consistent difficulties to get a good impression of her or his ability to take on the job.	4.45	4	4.43	4
4. Filter information carefully to avoid discrimination. Consider a candidate's entire presentation and eliminate him or her based on objective details pertinent to the ability to accomplish the job.	4.48	3	4.47	3
5. Discuss concerns with job candidates. Employers must legally provide information if requested - and also if any of the information found precludes those applicants from being hired.	4.58	2	4.54	2
Overall Weighted Mean	**4.51 (HI)**		**4.48 (HI)**	

Legend: Highly Implemented (HI), weighted mean ($\overline{x}_w$).

A payroll system contains everything related to payment of services by the employees. This includes number of rendered service hours/days, computed wages, government taxes and other social contributions. the assessment of respondents on both HROs as to payroll services rated as Highly Implemented (HI) with overall weighted means of 4.50 and 4.56 (see Table 7). All items rated as Highly Implemented, such as: use of real time mechanism in payroll processing ($\overline{x}_w$ = 4.65 and 4.69); using salary structures in your payroll system for pay-outs ($\overline{x}_w$ = 4.58 and 4.64); ensuring transparency through salary slips ($\overline{x}_w$= 4.52 and 4.60); statutory reporting through the payroll ($\overline{x}_w$ = 4.48 and 4.51); and integration of various activities through an automated payroll system ($\overline{x}_w$ = 4.29 and 4.36). It reveals that the two HROs exercised good practices in payroll services as of outsourced employees. Proper payroll requires careful planning and proper tools to get the job done so your employees can expect their pay cheques to arrive on time, without any errors. Hartz, Rouch and Ousais (2019) stated that selectable payroll amount for instant payroll deposits are describe as to the integration of various activities through an automated payroll system. A service provider can receive employee payroll information indicating an employee account at which an employee is to receive compensation information indication compensation to be received. The service provider can leverage a data model to determine that the employee is eligible to receive at least a portion of the compensation is an instant deposit transfer.

Table 7
HRO as to Payroll Services

Indicator	$\overline{x}_w$ HRO A	Rank	$\overline{x}_w$ HRO B	Rank
1. Use of real time mechanism in payroll processing.	4.65	1	4.69	1
2. Ensuring transparency through salary slips.	4.52	3	4.60	3
3. Using salary structures in your payroll system for pay-outs.	4.58	2	4.64	2
4. Integration of various activities through an automated payroll system.	4.29	5	4.36	5
5. Statutory reporting through the payroll.	4.48	4	4.51	4
Overall Weighted Mean	**4.50 (HI)**		**4.56 (HI)**	

In terms of ranking, there is no different in the assessment of respondents on HROs as to risk management (Table 8). However, respondents rated HRO B in all indicators as Implemented (I) (except indicator 2, moderately implemented (ME)). This revealed the differences of two HROs as to risk management practice. HRO A performs better than HRO B in this criterion. Indicator 2 obtained the least among the specified indicators for both HROs. Involvement of the stakeholders in risk management activities and being submissive to several risk may influence the good sequence of their activities therefore risk management to be proved as a good management philosophy that can reduce or limits negative effects of risk. This method allows to put the risk that may affect the performance of the company and to structure these risks according to risk priority number (Emmouri, 2015).

Table 8
HRO as to Risk Management

Indicator	$\overline{x}_w$ HRO A	Rank	$\overline{x}_w$ HRO B	Rank
1. Creating a strong risk management.	4.23	4	3.90 (I)	4
2. Involve the stakeholders in risk management activities.	3.97 (I)	5	3.35 (ME)	5
3. Clear risk management policies.	4.35	3	4.07 (I)	3
4. Creating awareness of risk through communication to entire organization.	4.48	1	4.15 (I)	1
5. Clear monitoring processes must be established to ensure that any and all risk mitigation efforts are working and are effective.	4.45	2	4.10 (I)	2
Overall Weighted Mean	**4.30 (HI)**		**3.91 (I)**	

A positive work environment including supports and assistance benefits all employees (https://www.entrepreneur.com/article/331549). Table 9 shown that both HROs highly implemented assistance and counselling for employees. A good employees assistance program (EAP) may improve employee retention (see table 4). In this, the respondents rated their HROs with high implementation. The indicator: employ professional counsellors and other experts to ender the counselling obtained the lowest weighted mean of 4.26 and 4.17 for this practice.

A study done by Padmasiri (2014) revealed that counselors can help individuals to find and maintain work that uses their skills, talents, and attributes in order to support career

engagement. Employing professional counselors and other experts to render the counseling has a big impact on the organization. Counselors can help employers support career engagement through special projects, cross training, transferring employees into different positions, or in some cases facilitating a gracious exit from the organization.

Table 9
HRO as to Employees Assistance / Counselling

Indicator	$\overline{x}_w$ HRO A	Rank	$\overline{x}_w$ HRO B	Rank
1. Employ professional counsellors and other experts to render the counselling.	4.26	5	4.17 (I)	5
2. Understand the different types of character and type of employees.	4.32	3	4.28	3
3. Use common sense when deciding what include in Employee Assistance Program.	4.29	4	4.24	4
4. Endorse and promotes EAP.	4.35	2	4.31	2
5. Responds to emergency cases of employee conflicts.	4.39	1	4.34	1
Overall Weighted Mean	**4.32 (HI)**		**4.27 (HI)**	

Preparing staff and maintaining the set standard are among the practice being highly implemented by the two HROs (HRO A and HRO B). They vary evaluated from using staff in benchmarking, set performance expectation clearly and showing the ropes in the organization. However, this variation seems negligible in magnitude as it was shown in Table 10.

Table 10
HRO as to Temporary Staffing

Indicator	$\overline{x}_w$ HRO A	Rank	$\overline{x}_w$ HRO B	Rank
1. Set clear performance expectation.	4.20	5	4.39	3
2. Use your staff to create a benchmark.	4.23	3	4.10	5
3. Maintain your standard.	4.27	2	4.48	2
4. Prepare your staff.	4.33	1	4.52	1
5. Show them the ropes.	4.13 (I)	4	4.19	4
Overall Weighted Mean	**4.23 (HI)**		**4.34 (HI)**	

Among the HRO practices, health care benefits obtained the lowest weighted mean based on the evaluation of the respondents (see Table 6-13). Majority of the indicators garnered values ranging from 3.31 to 3.67 which were interpreted as moderately implemented (Table 11). Only law mandated practice, maternity leave (at least 3months) / paternity leave (14 days benefits) attained highly implemented (https://www.dole.gov.ph/news/implementing-rules-and-regulations-of-republic-act-no-11210-of-the-105-day-expanded-maternity-leave-law/). The mandatory annual medical check-up also rated high in which medical fees were shouldered by every employee.

Burton (2019) stated, a healthy workplace is one in which workers and managers collaborate to use a continual improvement process to protect and promote the health, safety and well-being of workers and the sustainability of the workplace by considering the following based on identified needs, health and safety concerns in the physical work environment, health, safety and well-being concerns in the psychosocial work environment including organization of

work and workplace culture, personal health resources in the workplace, and ways of participating in the community to improve the health of workers, their families and other members of the community.

Table 11
HRO as to Healthcare Benefits

Indicator	$\bar{x}_w$ HRO A	Rank	$\bar{x}_w$ HRO B	Rank
1. Medical card	3.6 (ME)	4	3.31 (ME)	5
2. Annual Check up	4.27	2	4.48	2
3. Medical clinic with nurses and doctors.	3.67 (ME)	3	3.59 (ME)	3
4. Health program like gym and exercise.	3.5 (ME)	5	3.52 (ME)	4
5. Maternity/Paternity benefits.	4.32	1	4.52	1
Overall Weighted Mean	**3.87 (I)**		**3.88 (I)**	

As presented in Table 11, the assessment of respondents on HRO A and HRO B as to retirement planning rated as Implemented (I) with overall weighted means of 4.05 and 4.07, respectively. Only the item: seminar for the close to retirement employees rated as Highly Implemented (HI). This shown at retirement planning is applied in human resource outsourcing. Brown et al., (2010) affirmed that orientation for the retirement planning is essential to conduct in an organization since retirement must be seriously planned.

Table 12
HRO as to Retirement Planning

Indicator	$\bar{x}_w$ HRO A	Rank	$\bar{x}_w$ HRO B	Rank
1. Planning and implementing a regular savings / investment program.	4.15	3	4.15	2
2. Orientation for the retirement planning.	3.75	5	3.85	5
3. Seminar for the close to retirement employees.	4.35	1	4.30	1
4. Company gave attention to the employees for the retirement planning.	3.84	3	3.95	4
5. Company provides the needs of employees for retirement planning.	4.18	2	4.10	3
Overall Weighted Mean	**4.05 (I)**		**4.07 (I)**	

Performance management should be view as a continues process of identifying, measuring and developing the performance of individual and teams and aligning performance with strategic goals of the organization (Bernandin and Robins, 2013). As reflected in Table 13, the assessment of respondents on both HROs as to performance management rated as Highly Implemented (HI) with overall weighted mean of 4.34. The high levels of performance are recognized and rewarded received the highest mean of 4.48 and 4.45 for HRO A and HRO B, respectively. In addition, Table 13 reflected that, outsourced employee evaluated fair and just and rewarded for their good performance. The human resource outsourcing has better system when it comes to performance management.

Table 13
HRO as to Performance Management

Indicator	$\overline{x}_w$ HRO A	Rank	$\overline{x}_w$ HRO B	Rank
1. Fair and just appraisal.	4.23	5	4.26	5
2. Transparent appraisal and well communicated to the employees.	4.29	4	4.30	3
3. High levels of performance are recognized and rewarded.	4.48	1	4.45	1
4. The system is designed for input from all levels in the organization.	4.39	2	4.40	2
5. The system measures the right things.	4.32	3	4.28	4
Overall Weighted Mean	**4.34 (HI)**		**4.34 (HI)**	

Table 14 summarizes the respondent's overall assessment on the human resource outsourcing practices. As indicated in ranking, the best practices of HRO A and HRO B are the background screening, payroll services and performance management. Relative to the practices, it was common to both HMOs that they are short but still implementing the healthcare benefits and retirement planning (rated implemented (I)). It is visible that in risk management, the rate of HRO A is better than the rate of HRO B. The difference in the means of the two HROs is ranging from 0 to 0.11 except for risk management with 0.39 differences.

Table 14
Summary of the Human Resource Outsourcing

Practices	$\overline{x}_w$ HRO A	Rank	$\overline{x}_w$ HRO B	Rank
1. Background Screening	4.51	1	4.48	2
2. Payroll Services	4.50	2	4.56	1
3. Risk Management	4.30	5	**3.91 (I)**	7
4. Employees Assistance / Counseling	4.32	4	4.27	5
5. Temporary Staffing	4.23	6	4.34	3.5
6. Healthcare Benefits	**3.87 (I)**	8	**3.88 (I)**	8
7. Retirement Planning	**4.05 (I)**	7	**4.07 (I)**	6
8. Performance Management	4.34	3	4.34	3.5
Grand Mean	**4.27 (HI)**		**4.23 (HI)**	

In order to determine whether there is a significant difference between the practices of two HMOs, the analysis of variance (ANOVA) is incorporated in the study. Table 15 illustrated the results of the ANOVA of best practices of the two HROs. The computed p-value between groups is 0.78, this is larger than the specified p-value of 0.05. Even the values of means of two HROs were observable (see Table 14), the result suggested that there is no significant difference existed between the practices of the two HROs.

Table 15
Results of ANOVA of Best Practices of HRO A and HRO B

Source of Variation	df	F	P-value	F crit
Between Groups	1	0.0821	0.7785	4.600
Within Groups	14			

B.   Problems encountered in the HMO

Table 16 indicated the problems encountered by the respondents both Human Resource Outsourcing. Among the problems stated in Table 16, no involvement of stakeholders in risk management activities and inadequate health program like gym and exercise were evaluated as encountered. Problems linking to healthcare benefits (Problems 4 and 5, Table 16) were moderately encountered by outsourced employees. Other problems associated to risk management, incentives and inclusion of staff in creating benchmark were least encountered.

Table 16
Problems Encountered in Human Resource Outsourcing

Problems	$\overline{x}_w$ HRO A	Rank	$\overline{x}_w$ HRO B	Rank
1. No involvement of stakeholders in risk management activities.	3.75 (E)	1	3.55 (E)	1
2. Include staff in creating benchmark.	1.90	7	2.23	5
3. Not visible in showing employees the ropes.	1.81	8	1.74	8
4. No Medical card	3.20 (ME)	3	3.10 (ME)	4
5. Limited medical clinic with nurses and doctors	2.85 (ME)	4	3.23 (ME)	3
6. Inadequate health program like gym and exercise	3.45 (E)	2	3.40 (E)	2
7. No or little performance incentives	1.95	6	2.04	7
8. No orientation about risk management	2.25	5	2.15	6
Overall Weighted Mean	**2.64 (ME)**		**2.68 (ME)**	

Legend: Moderately Encountered (ME), Encountered (E)

CONCLUSION

The practices of two HROs with ratings Highly Implemented (HI) can be considered as best practices or key strengths. These are the background screening, payroll services, temporary staffing, and performance management, employees assistance/counselling, risk management (except for HRO B). The healthcare benefits and retirement planning are categorized as Implemented (I). For best satisfaction of the outsourced employees, these practices need to improve. The variations of the means of the practices of two HROs are ranging from 0 to 0.11 (except for risk management). This contributed to the result of the ANOVA of the two groups stated that there is no significant difference in the practices of HRO A and HRO B.

Among the problems observed in HROs, no involvement of stakeholders in risk management activities and inadequate health program like gym and exercise are rated encountered (E). No medical card and limited medical clinic with nurses and doctors are moderately encountered. These are common problems not only by the outsourced employees in retail business establishments but also for the majority of the labor force in the Philippines.

RECOMMENDATION

From the foregoing findings and conclusions, the following recommendations are offered:

1.   Develop all Human Resource functions to keep all outsourced employees more engaged in all activities in the organization and in order for the workforce improve their operations.

2.   Select which functions to hand over them, so you can keep personnel on hand to handle those important interpersonal relationships and to act as a liaison between outsourced employees and your HR vendors.

3.   Create a healthy environment for the employees by providing adequate health care benefits. Establish proper documentation of drug screening process, provide good risk management and set up a strong retirement plan.

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PSYCHOSOCIAL FACTORS AND PERFORMANCE OF BSE-MATHEMATICS 2: BASIS FOR A PROPOSED ENHANCEMENT PLAN

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INTRODUCTION

Learning is the ultimate goal of teaching. The main goal of the government thru DepEd is to provide quality education for all. This further defines the main role of teachers which is teaching and that must always bring about learning among students. Still, the quality of education is a challenge for every teacher, and providing continuous learning is a quest.

Good academic performance is very important not only to students and their parents but also to institutions of learning, educationists and any progressive mind would say. The quality of students' academic performance is influenced by a wide range of environmental factors rather them simply teacher factors and psychological factors within the learners such as motivation and the self, rather than simply by ability.

Life became easier. Nowadays, Mathematics is the key to all Sciences, despite explaining more about mathematics and the proof that it's really important, the students today don't like this subject. They think that Mathematics is a boring subject, and it's hard to understand formulas, they always say "Why should we study Mathematics, only four major operations are enough and the rest are no longer needed. We do not use graphs and formulas in our daily living." Only if they understand the logic behind this subject and the principles applied in different problems, if they get what Mathematics is meant to be, they will find that it is not a boring subject, that mathematics is an interesting one. Mathematics becomes part of our life, not only in our academic subjects but in all parts of our integral life. We don't see that even in simple conversation mathematics takes place. In our transportation, it also occurs, and in our daily living, it definitely applied.

Mathematics becomes part of our life, not only in our academic subjects but in all parts of our integral life. We don't see that even in simple conversation mathematics takes place. In our transportation, it also occurs, and in our daily living, it definitely applied.

Many studies have examined students' thinking about school and their attitude toward Mathematics. Mathematics performance involves a complex interaction of factors on school outcomes. Although the relationship between mathematics performance and student factors has been studied widely, it is important to explore the factors that contribute to students' mathematics performance.

Learner's engagement in mathematics refers to learners' motivation to learn mathematics, their confidence in their ability to succeed in mathematics, and their emotional feelings about mathematics. Learners' engagement in mathematics plays a key role in the acquisition of math skills and knowledge – students who are engaged in the learning process will tend to learn more and be more receptive to further learning. Student engagement also has an impact on course selection, educational pathways, and later career choices.

Mathematics performance has improved, though we are expecting students to achieve more by, providing instruction based on individual student needs and using a variety of methods to reach all learners. One factor has been aligning the math curriculum to ensure that the delivery of instruction is consistent with the assessment frequency.

This particular study attempts to determine psychosocial factors and mathematics performance of BSE-Math 2: Basis for an enhancement plan.

Conceptual Framework

The major concept of this study is focused on psychosocial factors and mathematics performance of BSE-Math 2: Basis for an enhancement plan.
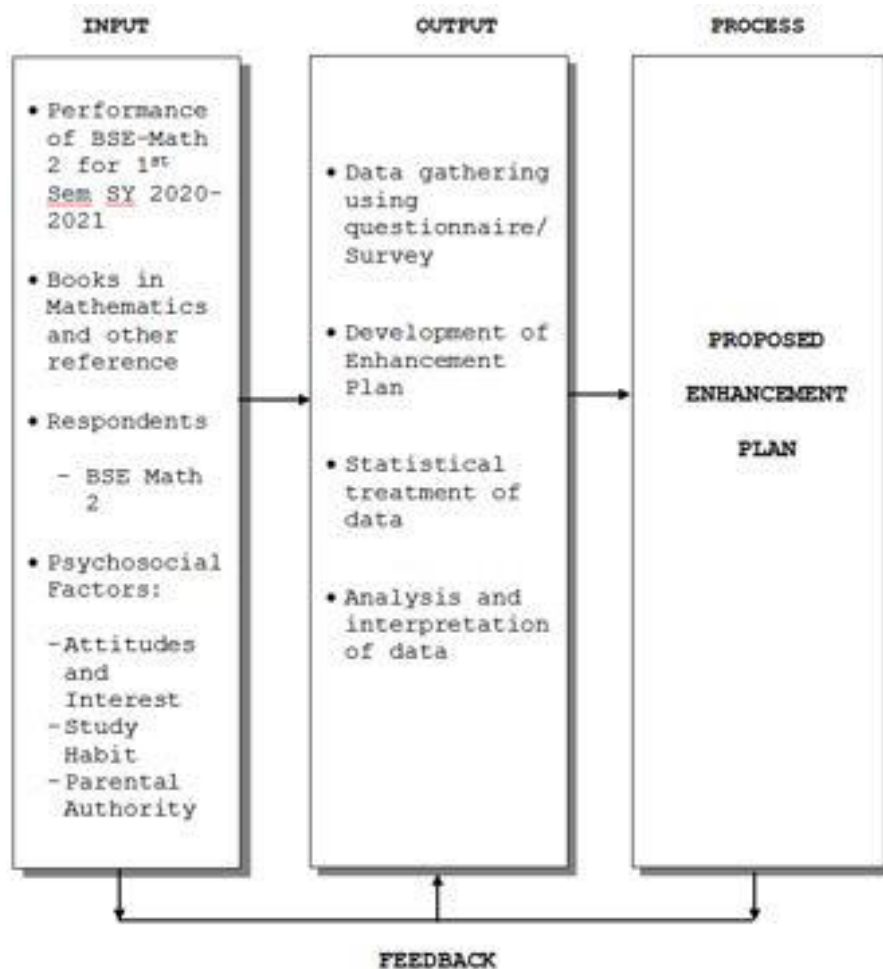

Figure 1. *Paradigm of the Study on the Proposed Enhancement Plan*

The **INPUT** consists of the result of the Performance of **BSE-Math 2** in Mathematics, books in mathematics, and another reference, and Psychosocial factors include Attitudes and Interests, Study Habit, and Parental Authority.

The **PROCESS** consists of data gathering data using a questionnaire/survey, the statistical treatment of data, and the analysis and interpretation of data.

The **OUTPUT** was the proposed enhancement plan to Design and improve teaching and learning Mathematics.

Statement of the Problem

This study aims to find out the psychosocial factors that affect the performance among BSE-Math 2, EARIST Manila, for the School Year 2020-2021.

Specifically, it sought to answer the following:

1.   What is the performance of BSE-Math 2 in Mathematics for the School Year 2020 – 2021?

2.   What are the psychosocial factors that affect the inclination of BSE-Math 2 in mathematics in terms of:

      2.1   Attitudes and interest;
      2.2   Study Habit; and
      2.3   Parental Authority?

3.   Is there a significant relationship between the performance of BSE-Math 2 and psychosocial factors?

4.   Based on the findings of the study, what plan may be developed to enhance teaching and learning mathematics?

Hypothesis

There is no significant relationship between the performance of BSE-Math 2 and the psychosocial factors of learners.

Scope and Limitation of the Study

The study was conducted at the College of Education- BSE-Math 2 during the current year. It was limited to the development of an enhancement plan to improve learners in Mathematics.

The respondents were 34 BSE - Math 2 at College of education respondents.

The research was conducted from December 2020 to February 2021.

Significance of the Study

The result of the study will merit the following:

Learners. This study helps the interest toward Mathematics and appreciate the importance of Mathematics in their daily lives.

Teachers. The results of this study may serve as an eye-opener to create and innovate instructional materials and to use varied and appropriate teaching strategies.

Guidance Counselor. This study will help develop the guidance program in line with the individual needs and abilities of the students.

School Heads. The result of this study could serve as baseline data to improve programs for school advancement.

Parents. Are directly concerned with the education of their children considering school performance in a different discipline.

Curriculum Planner. The result of this study will help them appraise the existing programs in terms of the learner's needs and abilities and make changes as required.

Future Researcher. The result of this study can serve as the basis for further study on teaching-learning activities and student mathematical performance.

Definition of Terms

For better clarification and understanding of the terms related to this study, the following terms are defined conceptually and operationally.

Attitude refers to a settled way of thinking or feeling about someone or something, typically one that is reflected in a person's behavior.

Interest refers to the feeling of a person whose attention, concern, or curiosity is particularly engaged by something: something that concerns, involves, draws the attention of, or arouses the curiosity of a person.

Mathematics Performance refers to the degree or capacity of intermediate learners' knowledge in Mathematics.

Psychosocial Factor relates to one's psychological development in, and interaction with, a social environment. The individual needs not to be fully aware of this relationship with his or her environment. It was first commonly used by psychologist Erik Erikson in his stages of social development.

Parental Authority is the ensemble of rights and powers that the law accords to the father and the mother concerning the person for the good of their unemancipated minor children, to the end of their accomplishing the duties of protection, education, and support that are incumbent on them.

Socio-Economic Status is an economic and sociological combined total measure of a person's work experience and an individual's or family's economic and social position concerning others, based on income, education, and occupation.

Study Habit refers to the definition of study habits as the habitual practices one uses to help one study and learn. Good study habits can help students achieve and/or maintain good grades.

METHODOLOGY

Research Design

This study is a quantitative and correlational study aimed at examining the relationships between psychosocial factors and performance of BSE – Math 2 in Mathematics.

This study made use of the descriptive design of the research. This method of research according to Scates and Goodwin (2007) is deal for investigation as the study aimed to present facts concerning the nature, status, and characteristics of any kind of phenomena and related observation to the presence and absence of certain other conditions to develop a frame of the relationship.

The researcher chose this design because it is the most appropriate design in describing the relationship between psychosocial factors and performance of BSE – Math 2 learners in Mathematics which will be the basis in proposing an enhancement plan.

Research Instrument Used

The study made use of the survey questionnaire.

It was composed of two parts:

Part I show the performance of BSE- Math 2 for SY 2020 – 2021.

Part 2 consists of the psychosocial factors that affect the inclination of intermediate learners in mathematics in terms of attitudes and interest, study Habits, and parental authority.

Data Gathering Procedures

The researcher in the conduct of the study undertook the following procedures:

1.   Constructed and developed the instruments used in the study.
2.   Administered the instruments to BSE – Math 2 learners' respondents.
3.   Collected the data for statistical treatment with due consideration to the sub-problems.

Statistical Treatment of Data

The data gathered were compiled, collated, and summarized separately per group. The responses for each item were categorized based on the specific problems raised.

The following were utilized in the treatment of the data:

Percentage. This was used as descriptive statistics that describe a part of a whole.

The formula used in computing percentage in this study is:

$$\% = f/N \times 100$$

Weighted Mean. *This was used to get the average frequency of the responses in each weighted item.*

Formula: $$WM = \frac{\sum_{i=1}^{n} f_i x_i}{N}$$

Likert's Scale and Interpretation

Psychosocial Factors:

Scale	Numerical Value	Descriptive Value
5	4.20 – 5.00	Strongly Agree (SA)
4	3.40 – 4.19	Agree (A)
3	2.60 – 3.39	Moderately Agree (MA)
2	1.80 – 2.59	Disagree (D)
1	1.00 – 1.79	Strongly Disagree (SD)

Mean Performance Score (MPS). This was used to determine the performance learning outcome assessment of the intermediate learners in Mathematics. (Garcia 2003).

Formula:

$$\text{MPS} = \frac{M}{N} \text{ x 50 + 50}$$

where:

MPS = Mean Performance Score
M = mean
N = number of items

For Interpretation

MPS	Descriptive Equivalent
96 – 100%	Mastered
86 – 95%	Closely Approximating Mastery
66 – 85%	Moving Towards Mastery
35 – 65%	Average
15 – 34%	Low
5 – 14%	Very Low
0 - 4%	Absolutely No Mastery

Correlation. This was used to determine whether or not a significant relationship exists between the performance of Intermediate Learners and Psychosocial Factors. It was solved using the formula: (Garcia 2004)

$$r = \frac{N\left(\sum xy\right) - \left(\sum x\right)\left(\sum y\right)}{\sqrt{\left[N\left(\sum x^2\right) - \left(\sum x^2\right)\right]\left[N\left(\sum y^2\right) - \left(\sum y^2\right)\right]}}$$

where:

$\sum xy$ = summation of the product x & y
$\sum x$ = summation of x

$\sum y$ = summation of y
$\sum x^2$ = summation of the source of x
$\sum y^2$ = summation of the source of y
N   = no. of Districts/variable
r   = Pearson Product Moment Correlation

Guide in interpreting coefficient of correlation

+1	**-**	Perfect correlation.
±0.91 to ±0.99	**-**	Very high Correlation, very dependable relationship.
±0.71 to±0.90	**-**	High Correlation, marked relationship.
±0.41 to±0.70	**-**	Moderate Correlation, substantial relationship.
±0.21 to ±0.40	**-**	Slight Correlation, but small relationship.
±0.01 to ±0.20	**-**	Slight Correlation, almost negligible relationship.
0	**-**	No correlation

PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA

Sub-problem No. 1. What is the performance of BSE – Math 2 Learners in Mathematics for School Year 2020 - 2021?

Table 1 presents the performance of BSE – Math 2 learners in Mathematics.

Table 1
Performance of Intermediate Learners in Mathematics for the Last Three Years

School Year	MPS	Description
SY 2020 – 2021	62.04	Average

Legend:

MPS	Descriptive Equivalent
96 – 100%	Mastered
86 – 95%	Closely Approximating Mastery
66 – 85%	Moving Towards Mastery
35 – 65%	Average
15 – 34%	Low
5 – 14%	Very Low
0 - 4%	Absolutely No Mastery

The BSE – Math 2 learners obtained an overall mean percentage score of 62.04 and interpreted as average in Mathematics for the School Year 2020 - 2021.

Sub-problem No. 2. What is the psychosocial factors that affect the inclination of BSE – Math 2 learners in Mathematics in terms of:

2.1 Attitudes and Interest

Table 2 shows the psychosocial factors that affect the inclination of BSE – Math 2 learners in Mathematics in terms of attitudes and interest.

As shown in the data, six items were assessed by the respondents as strongly agree, these are my Mathematics teachers encourage me to like mathematics (WM=4.50) rank 1; Mathematics is enjoyable and fun (WM=4.42) rank 2; the things I learn in Mathematics are very challenging (WM=4.40) rank 3; Mathematics makes me feel confident enough to answer activities (WM=4.29) rank 4.5; working together in a group on Mathematics exercises is a comfortable experience for me (WM=4.29) rank 4.5, and I like mathematics subjects because I learn a lot from it (WM=4.24) rank 6.

Four were assessed as agreeing: Mathematics is very interesting to me (WM=4.19) rank 7; I feel good/relaxed in Mathematics class (WM=4.00) rank 8; I am happier in Mathematics class than in any other subjects (WM=3.89) rank 9; I feel at ease in Mathematics and I like it very much (WM=3.87) rank 10.

Table 2
Psychosocial Factors as to Attitudes and Interest

Criteria	Weighted Mean	Verbal Interpretation	Rank
1. The things I learn in Mathematics are very challenging	4.40	SA	3
2. I am always afraid in Mathematics class.	3.15	MA	11
3. I like mathematics subjects because I learn a lot from them.	4.24	SA	6
4. Mathematics is very interesting to me.	4.19	A	7
5. Mathematics is enjoyable and fun.	4.42	SA	2
6. My Mathematics teachers encourage me to like mathematics	4.50	SA	1
7. Mathematics makes me feel confident enough to answer activities.	4.29	SA	4.5
8. I feel that topics I learn in Mathematics will not be useful to me in the future	2.89	MA	13
9. I feel a sense of insecurity whenever I attempt to study Mathematics	3.06	MA	12
10. I feel that Mathematics subjects are extremely boring	2.48	D	19
11. Mathematics makes me feel uncomfortable, restless, and impatient	2.40	D	20
12. I feel good/relaxed in Mathematics class	4.00	A	8
13. Mathematics makes me feel irritable	2.60	MA	16.5
14. When I hear the word Mathematics, I have a feeling of dislike	2.60	MA	16.5
15. Mathematics makes me feel shy, resulting from fear of not being able to do it.	2.77	MA	15
16. It makes me nervous/afraid even think about having to do a Mathematics problem	2.82	MA	14
17. I never like Mathematics; it is the least liked among my subjects	2.58	D	18
18. I am happier in Mathematics class than in any other subjects	3.89	A	9
19. I feel at ease in Mathematics and I like it very much	3.87	A	10
20. Working together in a group on Mathematics exercises is a comfortable experience for me	4.29	SA	4.5
Overall Mean	**3.47**	**A**	

Legend:

Scale	Numerical Value	Descriptive Value
5	4.20 – 5.00	Strongly Agree (SA)
4	3.40 – 4.19	Agree (A)
3	2.60 – 3.39	Moderately Agree (MA)
2	1.80 – 2.59	Disagree (D)
1	1.00 – 1.79	Strongly Disagree (SD)

Seven items were assessed as moderately agree: I am always afraid in Mathematics class (WM=3.15) rank 11; I feel a sense of insecurity whenever I attempt to study Mathematics (WM=3.06) rank 12; I feel that topics I learn in Mathematics will not be useful to me in the future (WM=2.89) rank 13; It makes me nervous/afraid even think about having to do a Mathematics problem (WM=2.82) rank 14; Mathematics me feel shy, resulting from fear of not able to do it (WM=2.77) rank 15; Mathematics makes me feel irritable (WM=2.60) rank 16.5; and When I hear the word Mathematics, I have a feeling of dislike (WM=2.60) rank 16.5.

While three were assessed as disagree, namely: I never like Mathematics; it is the least liked among my subjects (WM=2.58) rank 18; I feel that Mathematics subjects are extremely boring (WM=2.48) rank 19; Mathematics makes me feel uncomfortable, restless, and impatient (WM=2.40) rank 20.

Generally, the psychosocial factors that affect the inclination of BSE – Math 2 learners in Mathematics in terms of attitudes and interest gained an overall mean value of 3.47 and interpreted as agree.

Kolo et. Al (2017) found out that attitude and interaction are important factors in influencing students' academic performance positively in Potiskum College of education, Nigeria.

2.2 Study Habits

Table 3 reflects the psychosocial factors that affect the inclination of BSE – Math 2 learners in Mathematics in terms of study habits.

As reflected in the data, three items were assessed by the respondents as strongly agree, these are I enjoy learning (WM=4.63) rank 1; I usually seek a quiet place to study (WM=4.29) rank 2; I know what time of the day I do my best studying (WM=4.24) rank 3.

Five items were assessed as agreeing: good grades are important to me (WM=4.19) rank 4; I do my studying before I do anything else (WM=4.13) rank 5; before class starts, I review yesterday's lecture notes (WM=4.05) rank 6; I focus entirely on my work when I study (WM=3.98) rank 7, and I set a regular time for studying every day (WM=3.92) rank 8.

Ten items were assessed as moderately agree: I have trouble finishing test on time (WM=3.18) rank 9; I study best with radio or TV on (WM=3.15) rank 10; I put off studying that I should be doing (WM= 2.87) rank 11; I don't study unless I feel like it (WM=2.84) rank 12; I often have trouble finding enough time to study (WM=2.73) rank 13; I spend too much on some things and not enough on others (WM=2.71) rank 14; I waste time because I'm not organized (WM=2.68) rank 15; I don't remember much of what I study (WM=2.66) rank 16; I get sleepy when I study   (WM=2.61) rank 17, and I give up if an assignment is difficult (WM=2.60) rank 18.

Table 3
Psychosocial Factors as to Study Habits

Criteria	Weighted Mean	Verbal Interpretation	Rank
1. I have trouble finishing tests on time	3.18	MA	9
2. I set a regular time for studying every day	3.92	A	8
3. I study best with radio or TV on	3.15	MA	10
4. I give up if an assignment is difficult	2.60	MA	18
5. Before class starts, I review yesterday's lecture notes	4.05	A	6
6. I waste time because I'm not organized	2.68	MA	15
7. I focus entirely on my work when I study	3.98	A	7
8. I get sleepy when I study	2.61	MA	17
9. I enjoy learning	4.63	SA	1
10. I do my studying before I do anything else.	4.13	A	5
11. I usually seek a quiet place to study	4.29	SA	2
12. Good grades are important to me	4.19	A	4
13. I know what time of the day I do my best studying	4.24	SA	3
14. I don't study unless I feel like it	2.84	MA	12
15. I often have trouble finding enough time to study	2.73	MA	13
16. I don't remember much of what I study	2.66	MA	16
17. I don't do my best on tests because I am so nervous	2.45	D	20
18. I don't review lecture notes until the night before a test	2.47	D	19
19. I spend too much on some things and not enough on others	2.71	MA	14
20. I put off studying that I should be doing	2.87	MA	11
Overall Mean	**3.32**	**MA**	

While two were assessed as disagreeing: I don't review lecture notes until the night before a test (WM=2.47) rank 19 and I don't do my best on tests because I am so nervous (WM=2.45) rank 20.

The respondent's assessment on the psychosocial factors that affect the inclination of BSE – Math 2 learners in Mathematics in terms of study habits obtained an overall mean value of 3.32 and interpreted it as moderately agree.

2.3   Parental Authority

Table 4 exhibits the psychosocial factors that affect the inclination of BSE – Math 2 learners in Mathematics in terms of parental authority.

As exhibited in the data, three of the criteria were assessed as strongly agree, these are: I feel that my parents support my feeling of enjoyment to skill development (WM=4.35) rank 1.5; I feel that my parents tell me that making mistakes is part of learning (WM=4.35) rank 1.3, and I feel that my parents are most satisfied when I learn something new (WM=4.34) rank 3.

Five items were assessed as agreeing: I feel that my parents make sure that I learn one thing before teaching me another (WM=4.13) rank 4; I feel that my parents pay special attention to whether I am improving my skills (WM=3.97) rank 5; I feel that my parents make me worried about failing (WM=3.60) rank 6; I feel that my parents make me worried about performing skills that I am not good at (WM=3.47) rank 7, and I feel that my parents approve of me enjoying myself when I achieve without trying hard (WM=3.44) rank 8.

Table 4
Psychosocial Factors as to Parental Authority

Criteria	Weighted Mean	Verbal Interpretation	Rank
1. I feel that my parents are most satisfied when I learn something new	4.34	SA	3
2. I feel that my parents make me worried about failing	3.60	A	6
3. I feel that my parents look satisfied when I win without effort	3.08	MA	9
4. I feel that my parents pay special attention to whether I am improving my skills	3.97	A	5
5. I feel that my parents say it is important for me to win without trying hard	3.03	MA	10
6. I feel that my parents make sure that I learn one thing before teaching me another	4.13	A	4
7. I feel that my parents make me feel bad when I can't do as well as others	2.97	MA	12
8. I feel that my parents make me afraid to make mistakes	2.82	MA	13
9. I feel that my parents tell me I should be satisfied when I achieve without trying hard	3.02	MA	11
10. I feel that my parents support my feeling of enjoyment to skill development	4.35	SA	1.5
11. I feel that my parents make me worried about performing skills that I am not good at.	3.47	A	7
12. I feel that my parents tell me that making mistakes is part of learning	4.35	SA	1.5
13. I feel that my parents approve of me enjoying myself when I achieve without trying hard.	3.44	A	8
Overall Mean	**3.58**	**A**	

The rest were moderately agreed: I feel that my parents look satisfied when I win without effort (WM=3.08) rank 9; I feel that my parents say it is important for me to win without trying hard (WM=3.03) rank 10; I feel that my parents tell me I should be satisfied when I achieve without trying hard (WM=3.02) rank 11; I feel that my parents make me feel bad when I can't do as well as others (WM=2.97) rank 12, and I feel that my parents make me afraid to make mistakes (WM=2.82) rank 13.

The respondent's assessment on the psychosocial factors that affect the inclination of BSE – Math 2 learners in Mathematics in terms of parental authority gained an overall mean value of 3.58 and was interpreted as agree.

Oginni (2020) revealed that parental factors have a significant influence on students' academic performance in Mathematics. Also, students' disposition has a significant influence on their performance in Mathematics. The findings of this study confirmed the fact that; teachers' attributes, and students' disposition, are to a great extent valid factors that influence students' performance in Mathematics in Senior Secondary School.

Summary

Table 5 portrays the summary of the respondents' assessment on the psychosocial factors that affect the inclination of BSE – Math 2 learners in Mathematics.

Table 5
Summary Assessments

Criteria	Weighted Mean	Verbal Interpretation	Rank
1. Attitudes and Interest	3.47	A	2
2. Study Habit	3.32	MA	3
3. Parental Authority	3.58	A	1
Overall Mean	**3.46**	**A**	

As portrayed in the data, two variables were assessed as agree, namely: parental authority (WM=3.58) rank 1; and attitudes and interest (WM=3.47) rank 2. While one variable was assessed as moderately agree, namely: study habit (WM=3.32) rank 3.

Generally, the respondent's assessment on the psychosocial factors that affect the inclination of BSE – Math 2 learners in Mathematics obtained an overall mean value of 3.46 and interpreted as agree.

Mazana et. Al (2019) believed that students' learning of and performance in mathematics is affected by several factors, including students' attitude towards the subject, teachers' instructional practices, and school environment. They believed that students acquiring attitudes over time through direct experience of learning mathematics or by receiving information about the mathematics subject. Students use the learned attitudes as a guide to their overt behavior concerning mathematics learning, resulting in consistently favorable or unfavorable patterns of reactions towards the subject. Attitudes are assumed to be precursors of mathematics learning behavior.

Sub-problem No. 3. Is there a significant relationship between the performance of BSE – Math 2 learners and psychosocial factors?

Table 6 reflects the significant relationship between the performance of BSE – Math 2 learners and psychosocial factors.

As reflected in the data, for attitudes and interest vs. performance: the computed correlation value of .408 is lower than the critical value of .413 at a five percent level of significance with 21 degrees of freedom. It signifies that there is no significant relationship that led to accepting the hypothesis. Furthermore, there is a moderate correlation, the substantial

relationship between the performance of intermediate learners and psychosocial factors as to attitudes and interest.

Table 6
Significant Relationship

Variables	Correlation Ratio	cv at .05	df	Interpretation	Decision
1. Attitudes and Interest vs. Performance	.408	.413	21	Not Significant	Accept Moderate Correlation, substantial relationship
2. Study Habit vs. Performance	.262	.413	21	Not Significant	Accept H_o Slight Correlation, but a small relationship
3. Parental Authority vs. Performance	.980	.497	14	Significant	Reject H_o Very High Correlation, very dependable relationship

Guide in interpreting coefficient of correlation

+1	-	Perfect correlation.
±0.91 to ±0.99	-	Very high Correlation, very dependable relationship.
±0.71 to±0.90	-	High Correlation, marked relationship.
±0.41 to±0.70	-	Moderate Correlation, substantial relationship.
±0.21 to ±0.40	-	Slight Correlation, but small relationship.
±0.01 to ±0.20	-	Slight Correlation, almost negligible relationship.
0	-	No correlation

As to study habits vs. performance: the computed correlation value of .262 is less than the critical value of .413 at a five percent level of significance with 21 degrees of freedom. It signifies that there is no significant relationship that led to accepting the hypothesis. Furthermore, there is a slight correlation, but then a small relationship between the performance of intermediate learners and psychosocial factors as to study habits.

As to parental authority vs. performance: the computed correlation value of .980 is greater than the critical value of .497 at a five percent level of significance with 14 degrees of freedom. It signifies that there is a significant relationship that led to rejecting the hypothesis. Furthermore, there is a very high correlation, very dependable relationship between the performance of intermediate learners and psychosocial factors as to parental authority.

In the study of Peteros et. Al (2020) the Self-concept in mathematics can be defined as student ratings of their skills, ability, enjoyment, and interest in mathematics is seen as an essential factor in their achievement in math. This study assessed the self-concept and academic performance in Math of the Grade 10 students of a public national high school, Cebu, Philippines. The study employed descriptive correlational research. One hundred eighty-three respondents were asked to answer a survey questionnaire in order to measure their self-concept. Their academic performances were assessed using their grades in Math. The assembled information was dealt with measurably utilizing recurrence, percentage, weighted mean, t-test, and Pearson r. Results revealed that they had a moderate level of self-concept towards learning Mathematics. No gender difference was found on the self-concept of the respondents, but there was a significant relationship between self-concept and the respondents' academic performance in Mathematics. Hence, a Math performance enhancement plan is highly recommended for adoption and evaluation.

Sub-problem No. 4. Based on the findings of the study, what plan may be developed to enhance teaching and learning Mathematics?

TITLE : PSYCHOSOCIAL FACTORS AND PERFORMANCE OF BSE – MATH 2 LEARNERS IN MATHEMATICS: BASIS FOR A PROPOSED ENHANCEMENT PLAN

OUTPUT : ENHANCEMENT PLAN

RATIONALE

Mathematics plays a vital role in the modernization of this civilization and it is everywhere that affects the everyday lives of people. Although it is abstract and theoretical knowledge, it emerges from the real world as Mathematics is one of the essential and basic areas of the college curriculum which has a wide field of subject matter. It is the studies of numbers, the relationship between these numbers, and various operations performed on them. It is the science of quantity, size, and shape.

The teaching of Mathematics essentially helps the learners in acquiring essential Mathematics knowledge, skills, interests, and attitudes. And it is necessary for and helpful in the realization of the practical or utilitarian value, disciplinary value, and cultural value.

Attitude is the emotional disposition toward Mathematics. The researcher wanted to look at how the psychosocial factors of the intermediate learners towards Mathematics affect their performance in the class and if there is a correlation as well. Anxious individuals may avoid Mathematics classes, maybe they are more likely to have negative attitudes towards mathematics-related activities, or if they are elementary teachers, they may not spend as much time teaching mathematics as their less anxious colleagues.

The intervention plan is illustrated through the Area of Concern, Objectives, Strategy, and Activities, Resources Required, In-Charge, Time Frame, and the Expected Output. However, a support system can enhance the learning capacity of the young learners and the school head should address the issues raised in this study.

Table 7
Intervention Plan

AREA OF CONCERN	OBJECTIVES	STRATEGY & ACTIVITIES	RESOURCES REQUIRED	IN CHARGE	TIME FRAME	EXPECTED OUTPUT
Parental Authority	Captivate parents with students learning to boost the determination and assurance of the child.	Parents should: • Check your child's assignment list daily • Monitor daily work and be aware of the content being studied • Use computer software or online games or apps to practice math skills at home • Provide some math activities at home • Provide activities that enrich and relate mathematics to daily life • Closely monitor their children's activities in school, at home, and even in places outside their home	Home Reading materials in Mathematics Advance chart of the child	School Heads Teachers Parents	Year-round	Growth and rise parental involvement. Build a happy child with a love for numbers and related math learning.

Learners' Study Habits	Enhance the study habits of the learners.	Teachers should: • Manipulates are hands-on tools that make it a lot easier for learners • Use visual and images • Find opportunities to differentiate learning • Ask learners to explain their ideas • Incorporate storytelling to make connections to real-world scenarios • Show and tell new concepts in mathematics • Let your learners regularly know how they're doing • Encourages teachers to set aside time each day for math instruction • Look for opportunities to incorporate math throughout the school day and across the curriculum. Cooperate with parents to monitor improvement in study habits.	Lesson Plan Interactive Learning Materials Reading and Play Materials Follow up Report Evaluate learners' reports	School Heads Teachers Parents	Year-round under NEW SCHOOL OPENING	Enhanced study habits. Upgrade and increase performance in mathematics
Attitudes and Interest	Boost and encourage learners of mathematical learning	Teachers should: • Continuous assessment of the pupils' attitudes towards Math should be done to identify and assess their real needs • Resourceful and needs to exploit all the possible teaching theories and teaching strategies to redirect the negative attitude to positive attitudes towards Math • Intensive monitoring and supervision should be done by the school administrators to evaluate teachers' methods of teaching Math and employment of effective teaching strategies that will enhance pupils interest in Math • Improve their teaching methods and provide activities that will motivate and gain the pupils' interest in Math • Know beforehand the erroneous beliefs and attitudes of their pupils and endeavor to correct them to achieve effective teaching and learning • Demonstrate positive attitudes towards Math and their pupils to encourage them to have an interest in learning Math. Cooperative learning should be encouraged, for it creates team spirits and increased opportunities to interact and help each other.	Lesson Plan Interactive Learning Materials Reading and Play Materials Follow up Report Progress Monitoring & Assessment Form		Year-round under NEW SCHOOL OPENING	Improve school outcomes Crafted learning materials Increase learning materials

SUMMARY

The salient findings of the study were as follows:

1. On the performance of BSE-Math 2 Learners in Mathematics for the last three years

The BSE-Math 2 learners obtained an overall mean percentage score of 62.04 and interpreted as average in Mathematics.

2. On the psychosocial factors affect the inclination of intermediate learners in Mathematics

Two variables were assessed as agreeing: parental authority (WM=3.58), and attitudes and interest (WM=3.47) while, as moderately agree: study habit (WM=3.32) with an obtained an overall mean value of 3.46 and interpreted as agreeing.

3. On the significant relationship

3.1. Attitudes and Interest vs. Performance. The computed correlation value of .408 is lower than the critical value of .413 at a five percent level of significance with 21 degrees of freedom. It signifies that there is no significant relationship that led to accepting the hypothesis. Furthermore, there is a moderate correlation, the substantial relationship between the performance of intermediate learners and psychosocial factors as to attitudes and interest.

3.2. Study Habits vs. Performance: the computed correlation value of .262 is less than the critical value of .413 at a five percent level of significance with 21 degrees of freedom. It signifies that there is no significant relationship that led to accepting the hypothesis. Furthermore, there is a slight correlation, but then a small relationship between the performance of intermediate learners and psychosocial factors as to study habits.

3.3. Parental Authority vs. Performance. The computed correlation value of .980 is greater than the critical value of .497 at a five percent level of significance with 14 degrees of freedom. It signifies that there is a significant relationship that led to rejecting the hypothesis. Furthermore, there is a very high correlation, very dependable relationship between the performance of intermediate learners and psychosocial factors as to parental authority.

4. On the proposed enhancement plan

An enhancement plan was developed to provide and serve as a guide for the school heads and teachers to improve the academic outcomes of BSE-Math 2 learners in Mathematics.

CONCLUSIONS

From the findings of this study, the following were the conclusions:

1. The BSE-Math 2   learners performed average in mathematics.

2. The respondents agreed on the psychosocial factors that affect the inclination of BSE-Math 2 learners in Mathematics.

3. There is a moderate correlation, the substantial relationship between the performance of I BSE-Math 2 learners and psychosocial factors as to attitudes and interest, slight correlation, but the small relationship between the performance of intermediate learners and psychosocial factors as to study habits, and very high correlation, very dependable relationship between the performance of intermediate learners and psychosocial factors as to parental authority.

4. The developed enhancement plan serves as a guide for the school heads and teachers of the intermediate learners.

RECOMMENDATIONS

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

1. Teachers should exert more time and effort in teaching Mathematics to their learners with proper motivation and encouragement.

2. The teachers in Mathematics should be sent to training and workshop to equip and arm with sufficient knowledge and skill in Mathematics.

3. Teachers as facilitators of learning should plan and organize instructional activities based on the preferred learning styles of the learners to improve the rate and quality of learning.

4. School Heads should always support the teachers on the exerted efforts by endorsing the use of recommended strategies as instructional materials in teaching mathematics.

5. Recommend the proposed enhancement plan for use in various grade levels in teaching Mathematics.

6. A parallel study can be conducted with the same purpose to get feedback concerning the development and utilization of the proposed enhancement plan.

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ONLINE BOOKING PROCESS IN SELECTED   CONDOMINIUM: BASIS FOR ENHANCEMENT PLAN

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INTRODUCTION

Nowadays, the increased in numbers of global or local travellers and tourist demand in the Philippines has come up of using condominiums as renting accommodation with the help of online Booking Process. Condominiums with online booking process are becoming a popular means of reservation for travellers. With this means, travellers can easily booked rooms from home by using online system through online travel website of travel agencies. An increasing number of condominiums are thinking of building their own website to market their condominium directly to the customers. Through website the consumers can compare prices and facilities at different selected condominium with the same marketing strategies.

The benefits of this reservation system can simplify the task of using online booking; to enable the consumers saves time, mo0ney, and protect their privacy and financial information.

In conjunction to this, it is an eye opener and a rewarding move for a condominium to draw this line of services for both customers and businesses.

Statement of the problem

This study aims to study the problems that are been encountered by the customers on online booking process in selected condominium.

Sought to answer the following question:

1.   What is the profile of the customers in terms of:

    1.1   Age;

    1.2   Education;

    1.3   Sex;

    1.4   Income; and

    1.5   Nationality?

2.   How do the customer assess the online booking of condominium in terms of:

    2.1   Inquiry; and

    2.2   Type of booking?

3.   Is there significant relationship between the demographic profile and assessment of the customer?

4.   Based on the findings, what enhancement plan may be proposed?

Conceptual Framework

The input box consist of the profile of the respondents, customer assessment of the online booking of condominium which were analysed the significant relationship of the profile to the customers assessments and served as basis in finding, what enhancement plan can be proposed.

The process box consist of the formulation of survey questionnaires, the assessment of customers, the development of proposed development plan; the development and validation of the research instrument as to significant relation of development plan.

The output box reflects the prose enhancement plan for the online booking process in selected condominium.

Scope and Limitation of the Study

The scope of the study entitled "Online booking process in selected condominium basis for enhancement" is focus on the assessment of customers on online booking in selected condominium. The research aim to describe the online booking process in selected condominium through website application, this mean they can book immediately online, , such as inquiry, navigate point of access on the website, search engine protocol, selection of condominium guest room, selection of condominium guest packages, detailed confirmation of guest booking statement, validation response of guest booking statement, payment method of choice, validation of proof of payment

The limitation is through online booking, condominium. The customers message will be sent through the e-mail with the customer within 24 hours.

METHODOLOGY

The study will use descriptive method in assessing the online booking process of selected condominiums. This method is need to describe the ideas and point of views of the customers. The process was conducted using survey questionnaire aimed assessing variables related to online booking process in selected condominium.

Respondents of the study

The respondents of the study were twenty five in local sites composed of 4 male and 21 female in international sites composed of twenty five respondents 21 male and 4 female as shown table 1.

Data Gathering Procedures

The researchers have taken the step-by-step procedures of conducting the study. First, they search for topics, which have been not approved and formulated the title of the topic chosen. After searching, the researchers sought for the approval the researcher of the title from the thesis instructor. After the approval, the researchers gathered data regarding online booking process in selected condominium in. the researcher gather the data from surfing the

internet website, visiting travel agency and company through intermediaries, and visiting school where they looked for published books about the literature, some information from the faculty of "Amang" Rodriguez Cavite Campus through Researchers thesis. The researchers consulted the thesis Instructor, thesis adviser, and an expert in the study for the validation of survey questionnaire given to the local respondents through intermediaries travel agent and international respondents through company or corporation after which the researchers combined all the data that have been gathered right from the first chapter to the second chapter and submitted the data to be approved by the thesis instructor.

RESULTS AND DISCUSSION

The salient finding of the study are as follows:

Sub-Problem No. 1. Demographic profile of the respondents.

1.1   Age

As to age, 53-60 have 16 respondents or 32 percent, 29-36 have 11 respondents or 22 percent, 21-28 have 9 respondents or 18 percent, 45-52 have 6 respondents or 12 percent, 37-44 have 4 respondents or 8 percent, 61 above have 2 respondents or 4 percent, and 20 below have 1 respondents or 2 percent.

1.2   Educational Attainment

As to educational attainment the college have 32 respondents or 64 pecent, high school have 10 respondents or 20 percent, master's degree have 4 respondents or 8 percent, doctors degree have 1 or 2 percent and undergraduate have 2 respondents or 4 percent.

1.3   Sex/Gender

As to sex/ gender the male have 28 respondents or 56 percent, female have 22 respondents or 44 percent.

1.4   Income

As to income, the 50,000 below have 36 respondents or 72 percent, 100,000-149,000, and 150,000-199,000 have 6 respondents or 12 percent. 200,000-249,000 have 2 respondents or 4 percent.

1.5   Nationality

As to nationality, the Filipino has 41 respondents or 82 percent, Korean has 1 respondent or 2 percent, others have 8 respondents or 16 percent.

Sub-Problem No. 2. Customer assessment for online booking of condominium in terms of:

2.1   Inquiry

The composite of customer on online booking of condominium in terms of inquiry is 3.77 with a verbal interpretation of satisfied. For easy to navigate point of access on the website (wm=3.98), Accurate search protocol (wm=4.00), wide selection of condo hotel guest room (wm=3.67), Offering different selection of condo hotel guest room packages (wm=3.73),

presented a detailed conformation of a guest booking statement (wm=3.67), Quick and real-time validation response of guest booking statement (wm=3.71), Wide selection of payment method of choice (wm=3.63) and Quick and real-time validation proof of payment (wm=3.76) are all satisfied for verbal interpretation.

2.2 Type of Booking

The clients' assessment as to types of booking, they are satisfied on computer =online booking through websites (wm=3.08) and booking under the guarantee of a company or corporation (wm=3.53). on the contrary, the clients' are "Moderately Satisfied" on the booking through travel agents.

Sub-Problem No. 3. Significant relationship between the demographic profile and the assessment of the customers.

3.1 Inquiries

Inquires is significant related to Age while not related to civil status, educational attainment, gender, income and nationality.

3.2 Types of booking

Types of booking are significant related to civil status, age, and educational attainment while not related to sex, income and nationality.

Sub-Problem No. 4. Based on findings, what enchantment plan may be proposed?

The preparation of the proposed enhancement plan consider the customers assessment of online booking process as to given two (2) variables such as inquiry and types of booking.

CONCLUSIONS AND RECOMMENDATIONS

In the light of the findings of the study the following conclusions are drawn:

1. The results show that the demographic profile of the respondents in terms of age ranging 53-60 years and most prominent respondents are male with the range 50,000-below and with civil status of married.

2. The overall customer assessment in online booking process in condominium was rated "Satisfied". This is an indication that minor improvement is needed in achieving the full satisfaction of customers in terms of inquiries and types of booking.

3. Based on the customer assessment and demographic profile, inquires is significantly related to age while booking process are significantly related to civil status, age and educational attainment.

4. The proposed enhancement plans for Online Booking Process consider the respondents assessment in terms of Inquiries and Booking process.

Based from the findings and conclusions, the researchers offer the following recommendation:

1.   The Photos/Images and videos should be taken, to see actual facilities, amenities. This will ensure the customers to visualize what they will experience when they engage and have reservation for vacation.

2.   Secure promotional strategies to attract and eye catching website home page in the clients. Example "Book Now and enjoy 20% discount for this whole month of April".

3.   Evaluate sites and provide accurate information on the websites such as price accuracy of different packages, condominium packages, discounts and terms and conditions.

4.   Use real-time support during the booking process: such as chat box support, to address all customers concern as soon as possible. This will create good relation and impression between customer and condominium business.

5.   Use simple and accurate search engine to easily understand and manage by client during the website visit.

6.   Secure wide selection method in terms of payment. This will ensure the clients the terms of payment. This will ensure the clients the easy and faster way of paying transaction; as direct bank way of paying transaction; such as direct bank transfer payments, credit cards etc.

7.   Provide different selection of condominium room package for more variety of choices in the website.

8.   In accordance to recommendation no. 6, ensure the safety, security and confidentiality of the websites upon giving their credit card security number.

9.   Provide easy navigation of homepage site to give good services and satisfy the clients and engaged in booking.

10.   Provide/Upgrade computer server to secure recommendation number 8.

11.   Assigned IT Programmer to maintain and secure the website are performing well.

12.   Provide link on the website of personnel information that will handle and addressed all intermediaries from different agents.

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COMPUTER PROFICIENCY OF TECHNOLOGY AND LIVELIHOOD EDUCATION TEACHERS IN THE DIVISION OF TRECE MARTIRES SCHOOLS, PROVINCE OF CAVITE

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INTRODUCTION

The world's post–normal conditions at the present time affect the education systems adapted in the Philippines prior to the covid 19 pandemic period. The abrupt advent of such health crisis had posed very challenging demands for the school administrators and the teachers as the front liners in the implementation of immediate programs of the Department of Education to address the current issues besetting learning and teaching platforms amidst health protocols. The recurring theme over the years such as relevance and quality of graduates is imperative to nation-building and society. To restate one of the national educational aims, the educational system must respond effectively to the changing needs and conditions of the nation through a system of educational planning, articulation and evaluations.

Most recent studies on faculty development stressed the importance of enhancing professional growth among the teaching faculty in the light of ever changing faculty needs, teaching strategies, and survival needs facing today's educational institutions, and that its programs must be redesigned to meet these needs. Hand in hand with these facts and information, there has long been perceived as a crucial need for designing strategies to evaluate faculty development program.

It was mentioned that a teacher in the 21st century must possess a high level of emotional and mental intelligence and moral integrity. He should be open to change and globally competitive. As a professional, he is multi-skilled, being very competent in the fields of pedagogy, multimedia instructional technology, science and information technology, and having excellent communication and interpersonal skills. He has also high level of dedication, self-motivation and commitment to his profession. He loves teaching and his students. He himself is a lifelong learner who continually undergoes upgrading of his knowledge and skills.

The international materials that can transmit the essential knowledge and skills through a medium or a combination of media for conveying information to the pupils in terms of print and non-print or electronic medium that would contribute to the learning process, is potentially one of the most variables/interventions toward, teaching the subject.

With this problem brought about by the scarcity of instructional and supplementary materials to support teaching and learning effectiveness, the researcher/responded with exigency the computer-aided materials to develop computer aided approach which can motivate and encourage students to learn and to acquire the knowledge and skills in reading comprehension in the subject. This could serve as the foundation for lifelong learning. Likewise, the researcher also wanted to determine the proficiency level of TLE teachers in using computer in this pandemic time. Lessons especially, the computer-based instructional materials to enhance the performance of the students plays a crucial role to the success of learning notwithstanding the transfer of technology among the learners. It is in this light that researchers anchored their queries as assessed by the teachers itself, school heads and ICT experts.

Objectives of the Study

This study aimed at determining the proficiency of TLE teachers in computer technology as a major way of preparing instructional materials and emitting transfer of learning and communicating with students and other computer related tasks in dispensing their teaching effectiveness in curricular and co-curricular activities.

Statement of the Problem

This research attempted to determine the computer proficiency of Technology and Livelihood Education teachers in the Division of Trece Martires Cavite. More specifically, it sought to find answers to the following questions:

1. What is the level of computer proficiency of teachers in technology and livelihood education as assessed by teachers themselves, ICT experts and school heads in terms of:

       1.1   Basic Computer Operations;

       1.2   Basic Computer Maintenance;

       1.3   Word Processor; and

       1.4   Presentation Software?

2. Is there a significant difference among the assessment of the respondents on the above mentioned variables?

3. What are the problems encountered by the respondents as to computer proficiency of teachers in TLE?

Hypothesis

There is no significant difference in the assessment of the Respondents on the computer proficiency of teachers in Technology and Livelihood Education such as Basic Computer Operations, Basic Computer Maintenance, Word Processor, and Presentation Software.

METHODOLOGY

The study uses descriptive survey method and purposive sampling in this study. The researchers used the Purposive Sampling Technique in choosing the samples. The Technology and Livelihood Education teachers in Trece Martires Division, Province of Cavite were taken as representative samples of this study. In data gathering, the following procedures were undertaken by the researchers: (1.) Administer and distribute the research instrument to the respondents (2.) Collect personally the research instrument. (3.) Tabulate and compute. To analyze the gathered data, the researchers used **ANOVA.** This is used to answer the significant difference on the assessment of the respondents on sub. Problem no. 2

A 5- point Likert scale was used to determine the Proficiency level of the. The scales used are as follows:

Option	Equivalent	Verbal Interpretations
5	4.20 - 5.00	Highly Proficient (HP)
4	3.40 - 4.19	Proficient (PR)
3	2.60 - 3.39	Fairly Proficient (FP)
2	1.80 - 2.59	Least Proficient (LP)
1	1.00 - 1.79	Not Proficient (NP)

RESULTS AND DISCUSSIONS

Sub-Problem No 1. What is the level of computer proficiency of teachers in TLE as assessed by themselves, ICT experts and school heads in terms of:

1.1   Basic Computer Operations

The computed composite mean values of 3.48 were assessed by the three groups of respondents as Proficient on the level of computer proficiency of teachers in TLE as to basic computer operations.

1.2   Basic Computer Maintenance

In general, the computed composite mean value of 3.40 were rated as proficient on the level of computer proficiency of teachers in TLE as to basic computer maintenance.

1.3   Word Processor

In general, the computed composite mean values of 4.08 were interpreted by the respondents as proficient on the level of computer proficiency of teachers in TLE as to word processor.

1.4   Presentation Software

With regard to the assessment of respondents in the level of computer proficiency of teachers as to presentation which had been rated and interpreted as proficient supported with an overall weighted mean value of 3.75.

Sub-Problem No.2. Is there a significant difference among the assessment of the respondents on the above mentioned variables?

As to basic computer operations the obtained F-computed value of 3.50 is lower than the F-critical value of 3.52 at 5% level of significance. Therefore, there is no significant difference on the respondents' assessment and this leads to accept the null hypothesis.

In terms of basic computer maintenance, the obtained F-computed value of 1.00 is lower than the F-critical value of 3.35 at 5% level of significance. Therefore, there is no significant difference in the technology operations and concepts, and this leads to accept the null hypothesis.

As to word processor, the obtained F-computed value of 1.00 is lower than the F-critical value of 3.32 at 5% level of significance. Therefore, there is no significant difference in the word processor and this leads to accept the null hypothesis.

As to presentation software, the obtained F-computed value of 2.00 is lower than the F-critical value of 3.32 at 5% level of significance. Therefore, there is no significant difference in presentation software and this leads to accept the null hypothesis.

Sub-Problem No.3. What are the problems encountered by the respondents in using computer as instructional media in TLE as perceived by the respondents?

The problems encountered by the respondents were (1) too much workloads especially on paper tasks; (2) too much mental stress and financial burden on the pandemic situation, (3) Lack of time for integrating ICT in classroom as it shifted to modular, (4) Teachers are overwhelm with responsibilities in the shift of learning in new normal, (5) lack of computer units; (6) lack of teacher's confidence (7) Insufficient funds resources to finance the maintenance, and (8) Lack of technical support.

CONCLUSIONS AND RECOMMENDATIONS

The level of computer proficiency of teachers in TLE as assessed by themselves, ICT experts and school heads in terms of basic computer operations, basic computer maintenance, word processor and presentation software were all proficient. This shows that teachers were all qualified and ready to dispense learning in this changing times. But

Hence are the following summary of conclusions and Recommendations:

1.   The effect of pandemic has brought computer, computer proficiency and literacy indispensable as learning were mostly dependent on computer system. To boost confidence on different technology utilized as platforms, continuous upgrade on computer and technology training is recommended to keep abreast of the changing world.

2.   Capability development in emotional and mental stress for teachers should be given priority. Students as well should have webinars to help them cope up with the very demanding task of learning.

3.   To alleviate the burdens of teachers in computer issues, the administrators of the school should purchase computer/ netbooks units to be used by teachers in their official tasks/responsibilities.

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