



OLIVAREZ COLLEGE TAGAYTAY

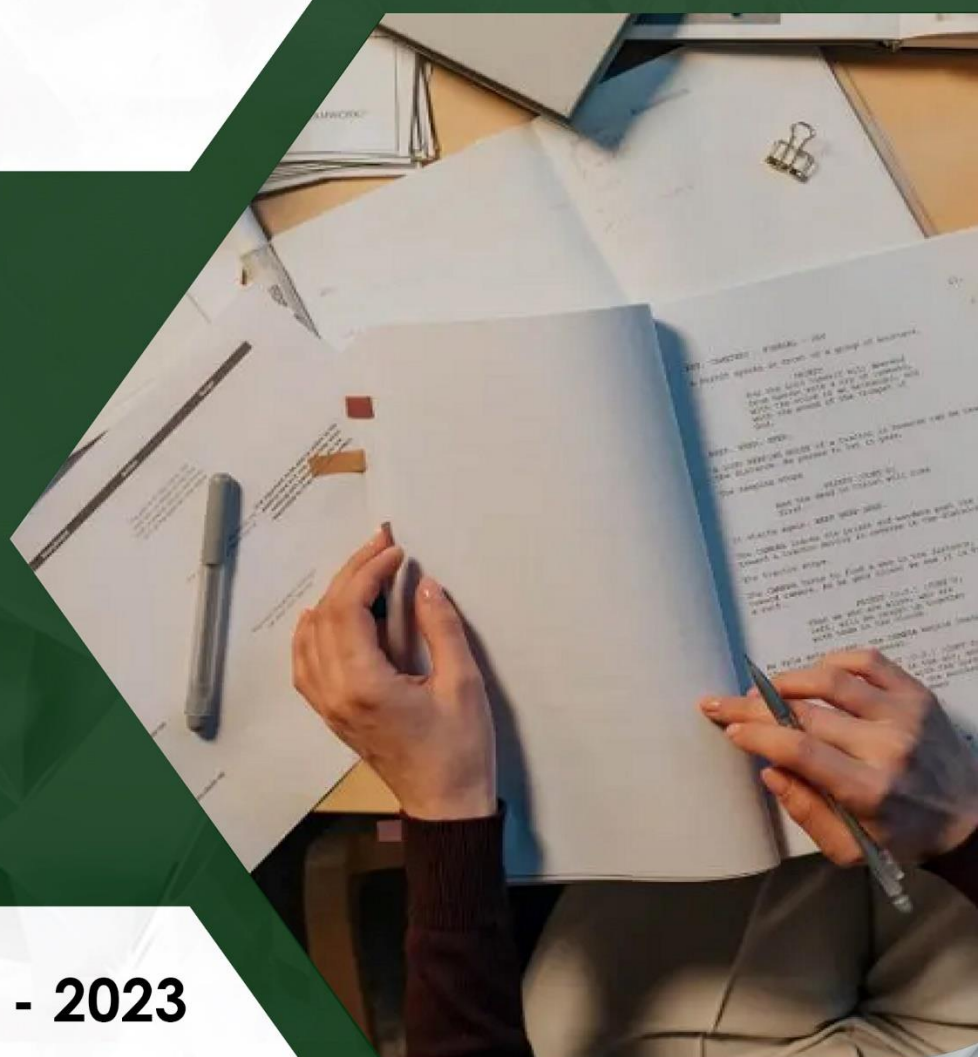
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Please send you inquiries to the head of Center for Research Publications, Planning, and Development – Olivarez College Tagaytay
E. Aguinaldo Highway, Barangay San Jose, Tagaytay City
E-mail: jeanrizzadelacruz@olivarezcollege.edu.ph
Telefax: (046) 860-2301

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FOREWORD




The School Year of 2022-2023 is very significant for the academic community. From two years of teaching and learning through modules and online, the academic community transitioned to a hybrid modality and then eventually to full face-to-face classes. Both students and teachers are apprehensive in this very crucial phase of education. Though there is that apprehension, they were also excited to see each other and finally be in the classroom and do academic work the usual way. For the Research Teachers, it means that finally, they can do face-to-face lectures, consultations and most importantly, they can help their students in the conduct of their research. Teachers and students were able to have a full experience in research.

Research teachers and students did not disappoint. Students were able to come up with research outputs that can be utilized by the school and the community. Most topics were relevant and touched the most vulnerable members of the society. This research practice will hopefully bring us to the day where decisions, plans and projects are all based on research results that are supported by data from all parts of society.

The support and guidance of our Senior High School Principal, Ms. Clarence A. Castillo, and our College Dean, Dr. Jean Rizza A. Dela Cruz, made the research endeavors of students more enriching and inspiring.

The following set of research students will have a high bar to reach as they indulge in their research work. This trend in research shows that Olivarez College Tagaytay is indeed a research-oriented institution. Stakeholders can all look forward to a more thought-provoking and exciting Senior High School journey with Research as its pinnacle.


MS. SHEILA V. OCAMPO, LPT

Research Coordinator

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Marquez, Mezhiah Altea*

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**Research, Survey, and Publication of the
SENIOR HIGH SCHOOL DEPARTMENT
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May 2023

**The Effectiveness of Google Forms as a Face-to-Face Learning Assessment Tool of
Grade 12 STEM Students in Olivarez College Tagaytay**

Mateo, John Lewis

Reyes, Ashley Sherry

Tampis, Sofia Nicole

Nibay, Richmonde

Rom, Klarenz Leido

Tolentino, Arron Dayson

Penano, Charlie

Sibug, Maurine Joy

Vidallon, Mark

Pilapil, Dominic Bowen

I. Abstract

Google form-based learning is a great substitute for educators to employ when doing assessment activities because it has the advantages of being successful, efficient, and also appealing to pupils. It is software that is simple to use, free to use, simple to operate, and pretty well developed as a tool for evaluating the learning process. Some students have difficulty accessing Google Forms while answering the assessment. Thus, the study aims to investigate The effectiveness of Google Forms as a face-to-face Learning Assessment Tool for grade 12 STEM Students in Olivarez College. The researchers used a stratified sampling technique, a total of 176 respondents from grade 12 STEM students with the use of Slovin's formula. In gathering the needed data, the researchers used an adopted questionnaire from Ethan et al., (2022) and Shianne Edelmayer (2020). The result revealed the effectiveness of features of Google Forms as a face-to-face learning assessment tool. In the category of features of Google Forms, the draft save features were most very effective, in the category of the manner of executing the exam the result revealed that giving instructions before the learning assessment is the most very effective manner. The researchers recommend to teachers and administrators to give enough feedback to the students in learning assessment and the researchers recommend that there should be a time extension when it comes to answering that specific exam.

Keywords: effectiveness, Google Forms, face-to-face, learning assessment tool, stem students, quantitative research.

II. Introduction

Google Forms can use to make a list, collect data, or conduct a survey. Google Form's capabilities as a form creator can be modified to be used as software for online examinations, evaluations, or the learning process based on its characteristics as a form maker. According to Jazil et al., (2020), users can utilize Google Forms for a number of productive tasks. Assessment using Google Forms for learning is a fantastic choice for educators in carrying out assessment tasks that are advantageous in that they are successful, and appealing to students. Agung et al., (2019), stated that the Google Forms exercise may be used as an efficient assessment tool. In addition, Hallur (2016) described the advantages of Google Forms as an assessment tool that can minimize burden while also improving efficiency and accuracy. Using Google Forms as an assessment tool became an appropriate learning assessment tool for students in this era of digital. Janzen, (2014), stated that mobile usage, including google forms, was appealing and easy to use. Software that is simple to use, cost-free, accessible, and quite nicely designed as a tool for assessing the learning process.

Google Form is implemented as a face-to-face learning assessment tool in Olivarez College Tagaytay to create a learning assessment for students. According to Thohir and Muslimah (2020), Google Forms can be considered by educators as a learning evaluation instrument and as an alternative to making online questions. Through Google Forms, educators can create assessments to meet curriculum objectives and ask various types of questions. Create professional-looking forms using themes, and get quick answers and respond instantly anywhere. Many students struggle using Google Forms as part of the learning assessment because they are used to the traditional test paper. Some senior high students of OCT are having a hard time adjusting as a result of this transition. Some of the students found difficulties in submitting the forms due to the internet connection. Some of them even had to start from the beginning to do the assessment. It is supported by the prior research finding by Agung et al., (2019), who stated that the constraints of the online assessment were mostly due to the internet connection.

The purpose of this study is to determine the effectiveness of google forms as a face-to-face learning assessment tool for OCT. The result of this study would determine the advantages of using google forms and how effective Google Forms is in learning assessment.

Specifically, the study sought to answer the following questions.

1. What is the demographic profile of the respondents in terms of:

- 1.1 Sex
- 1.2 Age
2. What is the level of effectiveness of Google Forms as a face-to-face learning assessment tool?
3. Based on the results, what recommendations can be given by the researchers to the teachers and administrators?

This study is all about the effectiveness of google forms in OCT during the school year 2022-2023. The aim of this study is to determine the effectiveness of Google Forms as a learning assessment tool. This study is limited to grade 12 STEM students of OCT because they are the students who use Google Forms.

This study is beneficial to students because the result of this study would help them to know how effective online Google Forms is. It is also beneficial to the teachers and to the administrators of OCT because they would be able to know how effectively they use Google Forms as a tool in learning assessment. This study would serve as a guideline for future researchers who want to conduct the same study on the same topic.

This study is anchored on the online E-learning theory proposed by David (2015) and Wang (2012) as cited by He (2022). E-learning theory is based on cognitive science concepts that show how the application and creation of educational technologies can improve learning effectiveness. Using electronic educational technology, this theory describes the cognitive science principles underlying efficient multimedia learning. Because it stresses how technology may be utilized and adapted to offer new learning opportunities and encourage successful learning, this theory is a part of the larger Connectivism movement. The study's application of this idea is important since it goes beyond just rules and procedures.

III. Methodology

In order to gather the necessary data, the researchers used a Quantitative Descriptive Research Design. It is a study design that is intended to gather information for the straightforward goal of describing the characteristics of the topic. Since the study's main goal is to determine the efficiency of Google Forms as a face-to-face learning assessment tool for grade 12 STEM students at Olivarez College Tagaytay, the data collection method is at one point in time. According to Siedlecki (2020), Descriptive Research Design describes individuals, events, or conditions by

examining them in their natural state. The researcher just describes the sample and/or variables, rather not modifying any of the variables. To gather the data needed, the researchers used a stratified sampling technique to divide the population into small groups based on common attributes and characteristics of one another Hayes (2019). From a total population of 315 grade 12 STEM Students of OCT S.Y 2022-2023, the researchers used Slovin's formula to get the size of the sample used, resulting in a total of 176 respondents grade 12 STEM students and subdivided into six (6) STEM sections: Aquarius, Orion, Scorpius with twenty-nine (29) respondents each and Vega, Vela, Virgo with thirty respondents each.

Before gathering the data, the researchers used an adopted questionnaire from Ethan et al., (2022) and Shianne Edelmayer (2020) to measure the effectiveness of Google Forms. The survey is composed of twenty-six (26) items for the categories of features of Google Forms and the manner of executing the exam using Google Forms. There are eleven (11) items for features of Google Forms and nine (9) items for manners of executing exams using Google Forms.

For the procedure, the researchers prepared the survey questionnaire using Google Forms and requested the permission of the school principal. After the permission was given, the researchers distributed the Google Forms survey questionnaire link through Messenger.

To measure the reliability of the test, the internal consistency of the items was computed using Cronbach's Alpha value. The Cronbach's Alpha value for this test was 0.960. The validity of the questionnaire was determined with the help of education experts and their suggestions were carefully incorporated.

Lastly, the researchers used frequency and percentage to determine the demographic profile of the respondents. The researchers will also use weighted means to know the level of effectiveness of google forms as a face-to-face learning assessment tool.

For the purpose of arriving at a definite interpretation of the findings, the researchers prepared a score and mean ranges for the scale.

Scale Ranges	Qualitative Description
3.26 - 4.00	Very Effective
2.51 - 3.25	Effective
1.76 - 2.50	Slightly Effective
1.00 - 1.75.	Not Effective

IV. Results

Problem 1. What is the demographic profile of the respondents in terms of?

1.1 Age

1.2 Sex

Table 1 Age of the Respondents

Age	Frequency(f)	Percentage(%)
17	63	35.8%
18	97	55.1%
19	14	8%
20	2	1.1%
Total	176	100%

Table 1 shows the frequency and percentage of the respondents. First, 63 students, or 35.8% of the respondents were 17 years old. Second, 97, or 55.1% were 18 years old. Third, 14 or 8% of the respondents were 19 years old. Fourth, 2 or 1.1% were 20 years old. With a total number of 176 respondents. The table shows that the majority is 18 years' old which is the average age of a senior high student.

Table 2. Sex of the respondents

Sex	Frequency (f)	Percentage (%)
Male	66	37.5%
Female	110	62.5%

Total	176	100%
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Table 2 shows the frequency and percentage of the sex of the respondents. 66 students or 37.5% of the respondents were male and 110 or 62.5% were female, with a total number of 176 respondents. The table presents that the majority of grade 12 STEM respondents were female.

Problem 2. What is the level of effectiveness of Google Forms as a face-to-face learning assessment tool?

Table 3. Effectiveness of Google Forms as a Face-to-Face Learning Assessment Tool

Indicators		Weighted Mean	Verbal Interpretation
Features Of	Google Forms		
1. The interface of Google Forms used in learning assessment.		3.32	Very Effective
2. The convenience of using Google Forms in learning assessment.		3.30	Very Effective
3. The accessibility of Google Forms during assessment		3.11	Effective
4. Efficiency in providing feedback.		3.26	Very Effective
5. Customization template of Google forms.		3.33	Very Effective
6. The clarity of text and images in learning assessment using Google forms.		3.35	Very Effective
7. The compatibility of Google Forms in any device.		3.32	Very Effective
8. The cost-effectiveness of using Google Forms.		2.91	Effective
9. Prevent cheating in learning assessment using Google forms.		3.42	Vere Effective
10. Getting an email notification for results.		3.42	Very Effective

11. The draft saves features of Google forms while taking the assessment.	3.42	Very Effective
Overall Weighted Mean	3.28	<i>Very Effective</i>

Table 3 shows that in terms of preventing cheating while using google forms as a face-to-face learning assessment tool, it is preventing cheating was effective as it gets a 2.91 weighted mean score. This implies that when they are having an assessment it is important to prevent cheating while answering, this study is supported by (Curran et al., 2011). Technological advances and online learning have enhanced education, however, they also have facilitated cheating in courses (Turner & Uludag, 2013). For instance, an examinee could use a mobile phone to text someone to get the answer.

Table 3.1 Effectiveness of Google Forms as a Face-to-Face Learning Assessment Tool

Indicators	Weighted Mean	Verbal Interpretation
Manners Of Executing Exam Using Google Forms		
1. Time limit for answering the learning assessment using Google Forms	3.00	Effective
2. Physical distancing during the learning assessment.	3.39	Very Effective
3. Giving the Google Forms link on the day of the learning assessment	3.41	Very Effective
4. Using the incognito tab in answering the learning assessment using Google Forms.	3.43	Very Effective
5. Using a permit to take a learning assessment.	3.30	Very Effective
6. Removing all other electronic devices or notes from the testing area/desk during learning assessment.	3.35	Very Effective
7. Using Google Forms there is no need to print or write on a paper in learning assessment.	3.51	Very Effective
8. Giving instructions by the teachers before the learning assessment.	3.59	Very Effective

9. No talking during the learning assessment.	3.50	Effective
Overall Weighted Mean	3.39	Very Effective

When it comes to its manners of executing exams using Google Forms, the Time limit for answering the learning assessment using google forms and No talking during the learning assessment got the lowest weighted mean of 3.00 and 3.50 which is verbally interpreted as “Effective”. It reveals that the grade 12 STEM students lack the time given by teachers to answer the learning assessment.

Table 4. The overall effectiveness of Google Forms as a face-to-face learning assessment tool in Senior High School of Olivarez College Tagaytay

Categories	Weighted Mean	Verbal Interpretation
Features of Google Forms	3.28	Very Effective
Manners of Executing Exam using Google Forms	3.39	Very Effective
Overall Weighted Mean	3.33	Very Effective

The table shows the overall level of effectiveness of Google Forms as a Face to Face Learning Assessment Tool. The data shows that manners of conducting exams using Google Forms got a weighted mean score of 3.39 which is verbally interpreted as very effective. On the other hand,

Features of Google Forms got a weighted mean score of 3.28 which is also verbally interpreted as very effective. Thus, the functions of Google Forms and methods for administering tests both methods of assessing student learning using Google Forms are efficient. The Senior High of Olivarez College Tagaytay verbally interpreted the effectiveness of Google Forms as a Face-to-Face learning Assessment Tool as "Very Effective" with a weighted mean score of 3.33. This means that the Senior High believes that using Google Forms is a very effective tool for learning

assessment.

V. Discussion

Overall, this study revealed the effectiveness of Google Forms as a face-to-face learning assessment tool in senior high school of OCT in terms of features of the Google Forms category was verbally interpreted as Very Effective Among the eleven (11) specific indicators under this category, while prevent cheating in learning assessment using Google forms and efficiency in providing feedback got the lowest weighted mean score This result revealed that google forms do not much prevent cheating in learning assessment and Google Forms are not able to provide much feedback to the students. On the other hand, the manner of executing exams using Google Forms was verbally interpreted as Very Effective. Among the nine (9) specific indicators under the manner category, the time limit for answering the learning assessment using Google Forms and no talking during the learning assessment got the lowest weighted mean score Therefore, grade 12 STEM students show that these two manners of executing exams are not much efficient in learning assessment.

The focus of this study was determining the level of effectiveness of google forms as a face-to-face learning assessment of grade 12 STEM of OCT in this S Y 2022-2023. The respondents of this study were only the STEM students of OCT. With the abovementioned, the researchers recommend to teachers and administrators to give enough feedback to the students and create a way to prevent cheating in assessment. The researchers recommend that there should be a time extension when it comes to answering the assessment.

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**Techy Tablet: Customer's Satisfaction on Self-Service Kiosk at
Tagaytay City Establishments**

**Delos Reyes, John Lloyd
Lelis, Marie France
Macatangay, Princess Adrielle
Seda, Mikylla Loraine**

**Jimenez, Alexa
Manalo, Hanna Joy
Molera, Krisna Cassandra
Poblete, Micaella Reilene**

**Lasmarias, Sheila Marie
Pillerva, Tricia Ann
Ruiz, Carmela Bianca**

I. Abstract

Self-service kiosks are technologies with sizable touch screens that allow customers to order food and pay bills without interacting with service employees, but some customers are still hesitant due to a lack of technical knowledge. Therefore, a business must understand its customers' needs and how to meet their satisfaction to be successful. A quantitative descriptive research design was used in this study, along with a purposive sampling technique. Following that, the researchers surveyed 50 students and 44 employees from Olivarez College Tagaytay who used self-service kiosks in Tagaytay City Establishments. This study utilized an adopted modified questionnaire that addressed the four major aspects of self-service kiosks that may influence customer satisfaction: order accuracy, ordering speed, convenience, and menu design. In collecting the data, a printed survey questionnaire was prepared. Furthermore, several statistical treatments, such as percentage, frequency, and weighted mean, were used to determine and assess the respondents' demographic profile and the four major factors. Collectively, the survey revealed that the majority of participants were satisfied with using self-service kiosks. Despite this, providing instructions on how to use it and providing a search bar will lead to higher customer satisfaction. Finally, the study's findings indicate that regardless of sex, category, or age, there is no significant difference in the degree of customer satisfaction on self-service kiosks. Future studies should consider the level of consumer satisfaction with self-service kiosks, as well as the level of self-service technology with online applications.

Keywords: Self-service Kiosks, Technology, Customer Satisfaction

II. Introduction

A lot of Fast-food chains are increasing the technology they utilize in their business. Electronic devices such as techy tablets are widely used to serve and attract their consumers. The techy tablet is renowned for being used independently without employees assisting customers; in other words, it is a self-service device. Self-service kiosk is a device with a sizable touch screen

that enables consumers to place orders for food, personalize their menu choices, and even pay their bills without speaking to staff members (Rastegar, 2018). However, self-service kiosks have few advantages and disadvantages; ease of use is one of its main benefits, customers often find it faster and more convenient to use them than to go to a counter. This has the added benefit of creating a positive customer experience, which leads to positive word-of-mouth. If customers have a good experience with the self-service technology, they are likely to tell others about it, thus increasing the potential customer base. Furthermore, self-service kiosks are not only serving customers faster and more efficiently, but they are also fundamentally changing customer behavior (Xu, 2022). In addition, self-service kiosks are pre-programmed to only execute commands to a limited extent. It has grown to be an essential component of consumers' daily lives, but despite the designers' and engineers' efforts to make the product more user-friendly, some people are unable to fully embrace it. Not to mention those buttons. But when it comes to disadvantage Self-service kiosks appear to be too stressful for a sizable group of people (Miranda, 2016). Consumers frequently rely on recommendations when ordering or seeking information about a specific menu item before deciding. The lack of a human element in kiosks makes it difficult for customers to decide what to eat. Employees are therefore absent and unable to watch over a customer's transaction. Also, there are no instructions or directions included with the device, resulting in some consumers becoming confused and some people choose to leave. That is why, even if they order from the self-service kiosk, they may not be satisfied enough to return (Artash, 2021).

The disadvantage of using a self-service kiosk is if a customer does not understand how to use it. The benefit of not having a staff for the kiosk will be lost because their staff will need to guide the customer to avoid a negative review (Artash, 2021). Besides that, self-service kiosks may experience hardware and software failure. These are unavoidable and can result in a loss of sales if the kiosks go down during peak hours. Some customers will not have the patience to wait in line, and there is also the risk of losing return customers. In addition, the self-service model is not appropriate for the disabled, older people, or those who have trouble embracing new technology. (Nilsson et al., 2021). Another disadvantage of this is that self-service kiosks are pre-programmed to only fully carry out requests. Typically, complicated transactions are not supported. This indicates that staff members are still required to oversee the transaction in the event that consumers have issues that the kiosk is unable to resolve (Miranda, 2016).

Machines should be allowed to perform tasks requiring consistency, accuracy, efficiency, and information according to Lafitte (2019), while self-ordering kiosks handle the monotonous task of guiding customers through the menu and processing orders, staff can be rearranged to handle tasks that humans are better at, such as assembling orders, maintaining restaurant cleanliness, interacting with customers to ensure their satisfaction, and bringing food to the table. Moreover, Employees spend a short while in a kiosk that is close to the entrance. In addition to the kiosk, there are chairs and a few computers, and a sign advertises the availability of the internet. There are also soft drinks and fruit to be able to serve customers waiting time (Söderlund, 2016). In conclusion, after combining feedback from managers and specialists in the restaurant business. The relationship matrix provided by this House of Quality enables restaurants to quantitatively evaluate self-serving technological features in relation to technical design specificities. A relationship matrix like this can help in restaurant design so that customers receive better service (Park & Lehto, 2021).

Rastegar (2018) explained that some clients are still hesitant to utilize the self-service kiosks because they prefer to speak with the service providers due to their lack of technical understanding. Moreover, the use of self-service technologies was less familiar to older consumers. They tended to believe that they might make errors that were impossible for them to fix (Wang et al., 2012). Because of this, the queue for self-service kiosks can take a while. According to Chung & Park (2021), the persons who utilize self-service kiosks probably felt under time pressure because they were aware that others were waiting for their turns. Hence, it is crucial for the company to comprehend what the clients actually need and how to win their loyalty in order to run a successful firm.

The purpose of this quantitative study was to determine how self-service kiosks affect customer satisfaction. This research also seeks how technological devices affect different individuals with different ages, also to know every consumer's point of view regarding self-service kiosks.

This study aimed to answer the following question

1. What is the demographic profile of the respondents in terms of

- 1.1 Sex

1.2 Age

1.3 Category

1.3 a. Employee

1.3 b. Student

2. What is the level of customer satisfaction in self-service kiosks in terms of:

2.1 Accuracy of order

2.2 Convenience

2.3 Ordering Speed

2.4 Menu Design

3. Is there a significant difference in the level of customer satisfaction if grouped according to profile category?

This study focused on students and employees from Olivarez College Tagaytay who used self-service kiosks within Tagaytay City establishments only. It focused on the characteristics of self-service kiosks and their effectiveness in ensuring customer satisfaction. Additionally, to those who had difficulty adjusting to self-service kiosks.

This study was limited to students and employees of Olivarez College Tagaytay who used self-service kiosks in Tagaytay City establishments.

This research is significant to the students and employees of Olivarez College Tagaytay who used self-service kiosks in Tagaytay City establishments. This will benefit them to gain information about the characteristics of self-service kiosks and their effectiveness in ensuring customer satisfaction. This research will also help business owners evaluate customer experiences with self-service kiosks and improve the technology. Furthermore, the data and information acquired will assist future researchers in gaining ideas and understanding on how they would conduct and launch future research related to this topic.

This study was anchored by the Unified Theory of Acceptance and Use of Technology or UTAUT, a framework proposed by Venkatesh et.al (2003) which refers to forecasting technological adoption in a working environment, this theory is stated in a study by Yaacob, et al. (2021) titled "A Concept of Consumer Acceptance on the Usage of Self-Ordering Kiosks at McDonald's". This theory suggests that behavioral intention controls how technology is used. Prior studies have shown that there are moderating factors that influence one's utilization of SSTs. However, more self-efficacy is probably linked to customers using technology more frequently. Furthermore, in this study, this theory can be used to identify the factors that influence consumers' acceptance of self-service technologies such as kiosks. According to Shahril et al. (2021), there are four major aspects of self-service kiosks that may have an impact on customer satisfaction, including order accuracy, convenience, ordering speed, and menu design.

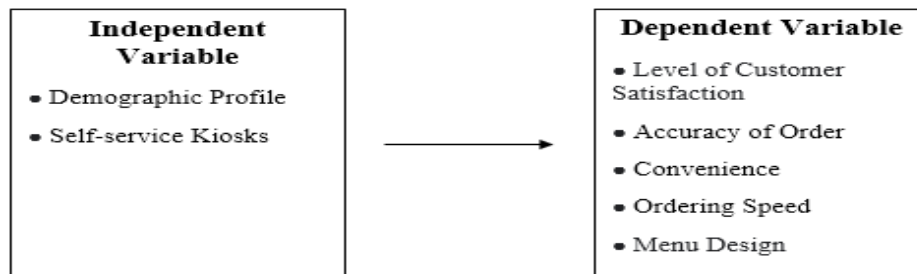


Figure 1. Independent and Dependent Variable of the Study

Figure 1 depicts the conceptual framework of the study, which has two different variables, the independent variable and the dependent variable. The first frame displays the study's independent variables, which are the demographic profile and self-service kiosks. Furthermore, the second frame displays the dependent variables of the study, which are the level of customer satisfaction with using self-service kiosks, accuracy of order, convenience, ordering speed, and menu design.

The hypothesis will be accepted or rejected in the proposed study on Customer Satisfaction in Self-Service Kiosk.

Based on the research problems, the researchers formulated the null hypothesis:

H₀: There is no significant difference in the level of customer satisfaction when grouped according to profile category.

III. Methodology

To achieve a significant result, this study employed a quantitative descriptive research design, a non-experimental research design in which the variables are examined but not changed by the researcher. The variables are measured numerically. Since, it described the nature of respondents in the level of customer satisfaction on self-service kiosks.

The researchers have utilized units that are selected based on their characteristics that are needed in the sample using the Purposive Sampling Technique (Nikolopoulou, 2022). Purposive sampling is a sampling strategy in which the researcher chose individuals from the population based on his or her own judgment. The researchers had accumulated 50 students and 50 employees from Olivarez College Tagaytay.

The researchers used an adopted modified questionnaire from the studies of Shahril et al. (2021), Hong & Slevitch (2018), Jamil et al. (2019), Hyun-joo Lee (2008) and Chang Mexen (2015) to assess the level of customer's satisfaction on Self-service kiosk in Tagaytay City establishments. The survey covered four major aspects of self-service kiosks that may influence customer satisfaction: order accuracy, ordering speed, convenience, and menu design. In this study, an ordinal scale ranging from "Very Unsatisfied", "Unsatisfied", "Satisfied", and "Very Satisfied" is used to collect and evaluate relative feedback about satisfaction, changing perceptions with product upgrades, and so on.

In collecting the data, the researchers prepared a survey questionnaire and requested the principal's approval to conduct this study. After permission was given, the researchers distributed the survey questionnaire to the respondents through printed materials. After collecting all the data, the researchers immediately analyzed the data given by the respondents.

The researchers made use of various statistical treatments, including percentage, frequency, and weighted mean, to determine and analyze the demographic profile of the respondents and the four major aspects of self-service kiosks that may influence customer satisfaction: order accuracy, ordering speed, convenience, and menu design while interpreting the survey participants'

responses using the mean score. To arrive at a precise interpretation of the results, the score and mean ranges for the scale were determined.

Scale Range	Qualitative Description
3.26 – 4.00	Very Satisfied
2.51 – 3.25	Satisfied
1.76 – 2.50	Unsatisfied
1.00 – 1.75	Very Unsatisfied

IV. RESULTS

Problem 1. What is the demographic profile of the respondents in terms of:

1.1 Sex

1.2 Age

1.3 Category

a. Employee

b. Student

Table 1.1 Sex of the Respondents

Sex	Frequency (f)	Percentage (%)
Male	60	64%
Female	34	36%
Total	94	100%

Table 1.1 shows the frequency and percentage of combined student and employee respondents depending on sex, with 60 male and 34 female respondents for a total of 94 respondents. The researcher arrived at the result since students have 32 male and 18 female respondents, while employees have 28 male and 16 female respondents; researchers simply added both respondents in students and employees according to their sex. Moreover, the majority of Olivarez College Tagaytay respondents who used self-service kiosks at Tagaytay City enterprises are male. Similarly, in Yang and Geetha's (2019) study, the frequency of male respondents is 221 (57.6%), while female respondents are 163 (42.4%), indicating that there are more male respondents than female respondents

Table 1.2 Age of the Respondents

Age	Frequency (f)	Percentage (%)
Under 15	0	0
15-24	63	68%
25-34	18	19%
35-44	7	7%
45-54	6	6%
55-64	0	0
Above 64	0	0
Total	94	100%

Table 1.2 shows the frequency and percentage of combined student and employee respondents by age. First, those aged 15-24 years old comprised 63 or 68%. Also, the aged 25-34 years old were 18 or 19%. However, the aged 35–44 years were 7 or 7%, and lastly, the aged 45–54 years were 6 or 6%, for a total of 94 respondents. The statistics show that the majority of users are younger, which is to be expected given that this generation has the greatest experience with self-service kiosks and is exposed to technology. According to Sands (2023), a kiosk-based menu was simpler to use than a menu board for more than 60% of millennials and almost 80% of Gen Zers. They also chose their desired things more easily implying that kiosks might even be simpler for younger clients to use.

Table 1.3 Category of the respondents

Category	Frequency (f)	Percentage (%)
Students	50	53%
Employee	44	47%
Total	94	100%

Table 1.3 of the results indicates that there are 94 respondents, the majority of whom are students, with a frequency of 50 and a percentage of 53. In contrast, there are 44 employees on average, making up a 47 percent proportion. Due to their greater technological knowledge, the chart above indicates that Olivarez College Tagaytay students make up the majority of the responders. It also implies that the majority of employees are either unable to use self-service kiosks or have a lack of understanding of how to use them. In contrast to 81% of older individuals, Muhammad (2023) reports that 90% of young people use self-service kiosks, and more young people choose self-service when given the option. Therefore, the majority of the respondents are familiar with technology, it merely indicates that more of the respondents are students.

Problem 2. What is the level of customer satisfaction in self-service?

2.1 Accuracy of order
 2.2 Convenience
 2.3 Ordering Speed
 2.4 Menu Design

Table 2.1 Level of Customer Satisfaction with Self-Service in Terms of Order Accuracy

Indicators		Students Weighted Mean	Employees Weighted Mean	Total Weighted Mean	Verbal Interpretation
1.	Self-service kiosks minimize errors.	3.14	3.09	3.12	Satisfied
2.	All products are included in the self-service kiosk.	3.02	3.19	3.11	Satisfied
3.	Self-service kiosks give users time to read the menu at their own pace without feeling rushed.	3.46	3.26	3.36	Very Satisfied
4.	Self-service kiosk is more accurate as contrasted to dealing with front desk staff.	3.14	3.09	3.12	Satisfied
5.	Received wrong order due to technical problems.	3.06	3.09	3.08	Satisfied
Overall Weighted Mean		3.16	3.03	3.10	Satisfied

Table 2.1 illustrates the level of student and employee satisfaction with the self-service kiosks in terms of order accuracy. The data shows that the indicator "Self-service kiosk give users time to read the menu at their own pace without feeling rushed." attained the highest weighted mean of 3.36, which was verbally interpreted as Very Satisfied, while the indicator "Received wrong order due to technical problems" attained the lowest weighted mean of 3.08, which was verbally interpreted as Satisfied. The total weighted mean of the level of customer satisfaction in terms of order accuracy is 3.10, which is verbally interpreted as Satisfied. To get a precise interpretation, the researchers calculated the mean score and mean ranges for the scale and used those scales to analyze the participants' responses. Based on the table, both students and employees

were satisfied with the order accuracy of the self-service kiosks. They have time to read the menus at their own pace and adjust them in a way that won't make them feel hurried. This shows how effective and beneficial the self-service kiosk is for customer satisfaction in terms of order accuracy. According to the study of Shahril et al. (2021), self-service kiosks accurately verify customers' orders and can be utilized without any error or mistake, even on their first attempt.

Table 2.2 Level of customer satisfaction in self-service in terms of convenience

Indicators	Students Weighted Mean	Employees Weighted Mean	Weighted Mean	Verbal Interpretation
1. Using the self-service kiosk systematically meeting the needs of today's generation of consumers.	3.14	3.23	3.19	Satisfied
2. Self-service kiosks provide a convenient payment method for users.	3.30	3.19	3.25	Satisfied
3. Self-service kiosks can simplify the buying process.	3.20	3.26	3.23	Satisfied
4. Using a self-service kiosk was confusing.	2.64	2.53	2.59	Satisfied
5. Using a self-service kiosk took a lot of effort.	2.94	2.53	2.74	Satisfied
Overall Weighted Mean	3.04	2.95	3.00	Satisfied

Table 2.2 shows the level of students and employee's customer satisfaction in self-service in terms of convenience. According to the data, the indicator "self-service kiosk provide a convenient payment for users" had the highest weighted mean of 3.25, which was verbally interpreted as highly Satisfied, while the indicator "using self-service kiosk was confusing" seemed to have the lowest weighted mean of 2.59, which was verbally interpreted as Satisfied. The total weighted mean in the level of customer satisfaction in terms of convenience is 3.00, which is interpreted verbally as Satisfied. To obtain a precise interpretation, the researchers determined the scale's mean score and mean ranges and utilized those scales to examine the responses of the participants. The study shows that self-service kiosks are helpful for customers in terms of the

payment process. Also, self-service kiosks can impact customer purchasing decisions. According to Partteam & Oemkiosks (2020), self-service kiosks are recommended for people who prefer to be in control of their own experiences, which ultimately lowers tension during this process. Self-service kiosks also increase user satisfaction by allowing customers to learn more about the products they are purchasing.

Table 2.3 Level of Customer Satisfaction in Self-Service In Terms Of Ordering Speed

Indicators	Students Weighted Mean	Employees Weighted Mean	Total Weighted Mean	Total Verbal Interpretation
1. Self-service kiosk enables one to order food more quickly.	3.36	3.30	3.33	Very Satisfied
2. Self-service kiosks have a simple and fast application.	3.40	3.26	3.33	Very Satisfied
3. Users often wait in line for a short time.	3.02	2.95	2.99	Satisfied
4. Users do not experience interruptions or lagging while using self-service kiosks.	2.98	2.70	2.84	Satisfied
5. Ordering takes a while due to a lack of familiarity.	3.12	2.91	3.02	Satisfied
Overall Weighted Mean	3.18	3.02	3.10	Satisfied

Table 2.3 presents the level of students' and employees' customer satisfaction in self-service in terms of ordering speed. The data shows that the indicators "Self-service kiosk enables to accomplish ordering food more quickly" and "Self-service kiosk has a simple and fast application" attained the highest weighted mean of 3.33 which was verbally interpreted as very satisfied, while the indicator "Users do not experience interruptions or lagging while using self-service kiosks" attained the lowest weighted mean of 2.84 which was verbally interpreted as satisfied. The total weighted mean in the level of customer satisfaction in self-service in terms of ordering speed is 3.10 which is verbally interpreted as Satisfied. As a result, self-service kiosks are advantageous to customers when it comes to serving and ordering speed, it can gain more

customers because many customers prefer quick serving to satisfy their needs. The researchers calculated the mean score and mean ranges of the scale and used those scales to analyze participant replies in order to gain a precise interpretation. Kokkinou & Cranage (2015) proved that shorter waiting times or faster service appears to influence customers' decision to use self-ordering technology.

Table 2.4 Level of Customer Satisfaction in Self-Service In Terms Of Menu Design

Indicators	Students Weighted Mean	Employees Weighted Mean	Total Weighted Mean	Total Verbal Interpretation
1. The layout of the menu design in the self-service kiosk is more attractive than on the board at the back of the counter.	3.22	3.21	3.22	Satisfied
2. The font in the self-service kiosk is more readable than the one displayed in the board at the back of the counter.	3.30	3.23	3.27	Very Satisfied
3. The color of the menu design in the self-service kiosk is more vibrant.	3.20	3.28	3.24	Satisfied
4. The menu belongs to the right category.	3.34	3.28	3.31	Very Satisfied
5. Users can facilitate more informed choices with ingredient lists and substitutions or customized orders.	3.34	3.19	3.27	Very Satisfied
Total	3.28	3.24	3.26	Very Satisfied

Table 7 presents the level of students' and employees' customer satisfaction in self-service kiosks in terms of menu design. The data shows that "The menu belongs to the right category." attained the highest weighted mean score of 3.31, which is verbally interpreted as Very Satisfied while "The layout of the menu design in the self-service kiosk is more attractive than in the board at the back of the counter." attained the lowest weighted mean score of 3.22 which is verbally interpreted as Satisfied. The total weighted mean in the level of customer satisfaction in terms of menu design is 3.26 which is verbally interpreted as Very Satisfied. The researchers interpreted

the survey participants' responses using the mean score to arrive at a precise interpretation score and mean ranges for the scale were determined. Based on the table, users were very satisfied with the menu design of the self-service kiosks, showing how well organized it was and how it offered customized orders that click to customer preferences. According to Wang et al. (2012), choosing the right colors for a menu's design is important for attracting customers. Since people tend to dislike things with colorful images, as a result, the layout of the menu should be organized and not vibrant.

Problem 3. Is there a significant difference in the level of customer satisfaction if grouped according to profile category?

Table 3.1 Significant Difference in the Level Of Customer Satisfaction if Grouped According To Sex

	Levene's Test		Independent Sample Test			
	F	Sig.	t	df	Sig.	Decision
The level of customer satisfaction	.005	.942	.192	91	.848	Accept Null

Legend: P-value <.05 Reject Null Hypothesis

Table 3.1 illustrate if their significant difference in the level of customer satisfaction if grouped according to age. To determine the result a two-sample t-test was performed to compare the level of customer satisfaction of the male and female customers. The data shows [$t(91) = .192$, $p = .848$], therefore the null hypothesis is accepted. This means that there is no significant difference in the level of customer satisfaction regardless of the sex. This demonstrates how sex, whether female or male, has no bearing on the level of consumer satisfaction. Consequently, it is unacceptable to base level of consumer satisfaction with self-service kiosks on an individual's sexuality. According to Rastegar (2018) there were no significant gender differences in the relationship in the Technology Acceptance Model in Self-Service Kiosks.

Table 3.2 Significant Difference in the Level of Customer Satisfaction If Grouped According to Student and Employee

	Levene's Test		Independent Sample Test			
	F	Sig.	t	df	Sig.	Decision
The level of customers satisfaction	.005	.942	1.638	91	.105	Accept Null

Legend: P-value <.05 Reject Null Hypothesis

To compare the level of customer satisfaction between student and employee customers, a two-sample t-test was used. The null hypothesis is accepted given that $[t(91) = 1.638, p=.105]$ is demonstrated by the data. Thus, regardless of their capacity to make purchases through them or have the knowledge to utilize them, self-service kiosks are available to everyone. No category significantly differs from any other in terms of consumer satisfaction. According to Al-Hersh et al. (2014), there were no group differences in the use of self-service kiosks. Given the information, using self-service kiosks is not restricted based on whether you are a student or an employee.

Table 3.3 Significant Difference in the Level of Customer Satisfaction if

Grouped According to Age

ANOVA table for the difference in the level of customer satisfaction when grouped according to age.

Category	Customer satisfaction	Sum of square	df	F	Sig	Decision
Age	Between groups	.338	4	.841	.503	Accept Null
	Within groups	8.848	88			
	N	9.187	92			

Legend: P-value < .05 Reject Null Hypothesis

Table 3.3 demonstrates if there is a significant difference in the level of customer satisfaction if grouped according to age. In identifying the result, a two-sample t-test compared the level of customer satisfaction if grouped according to age. The data shows $[F(4,88) = .841, p=.503]$, therefore the null hypothesis is accepted. This illustrates that there is no statistical

difference in the level of customer satisfaction if grouped according to age. According to Rastegar (2018), In the Technology Model of Acceptance, there was no significant age difference. Furthermore, age has no bearing on using a self-service kiosk implying that anyone of any age can utilize a kiosk successfully.

V. DISCUSSION

Overall, the survey found that the majority of respondents were satisfied with their experiences utilizing self-service kiosks. Based on the data, the age group that is most likely to use and be familiar with kiosks in the two categories of students and employees is between the ages of 15 and 35. In addition, most of the respondents who use self-service kiosks in Tagaytay City Establishments are male students in Olivarez College Tagaytay. When grouped by profile, this data becomes the most important factor in determining the differences in levels of customer satisfaction. Understanding the demographic profile is essential to effectively develop and implement marketing strategies based on the preferences of self-service kiosk users. According to Mirzagol & Memarian (2015), prior to taking action, they must precisely identify any clients who desire to use their service.

Problem two includes four categories: order accuracy, convenience, ordering speed, and menu design. Three of these categories received a “satisfied” result, while the other received a “very satisfied” result. But among the four categories, the Menu Design obtained the highest weighted mean and was considered as very satisfied while the Convenience obtained the lowest weighted mean but was still regarded as satisfied. This shows that the customers are very satisfied with the menu design in the self-service kiosks than at the ordering counter since self-service kiosks’ menu design is more organized and appealing in the eye of the customers. In support of this, Wang (2012) stated that the color of the menu design is critical in capturing the attention of the client. Self-service kiosks make the buying and paying process easier for the customers, and also some customers prefer to be in their own control when ordering. Although Convenience receives the lowest weighted mean, respondents are still satisfied with self-service kiosks. Gupta & Sharma (2021) assert that analysis and enhancement of technology offerings would increase customer satisfaction and lead to better satisfaction. As a result, this suggests that improving

factors of self-service kiosks especially in terms of convenience is still vital to attain customer satisfaction.

Based on the findings of the study, there is no significant difference in the level of customer satisfaction regardless of sex, category, or age. The level of customer satisfaction does not vary by your sexual orientation. Along with being a student or employee, it is not the foundation for your ability to use and be satisfied with self-service kiosks. Additionally, regardless of your age, you may utilize self-service kiosks and be satisfied; this implies that kiosks can be used by everyone. The study of Sivesan (2013) concluded unequivocally that there was no correlation between the personal demographic information included in the research and customer satisfaction. Furthermore, another study shows that regarding service quality, value, and satisfaction, there are neither connections nor variations between the main subgroups categories of age, education, and income (Yaya et al., 2014).

To clarify, the focus of this study was to determine consumer satisfaction with self-service kiosks in Tagaytay City enterprises. There were 50 students who participated in the survey, and only 44 employees. Employees had only 44 respondents because some of them did not respond to the survey questions due to their busy schedules. These respondents are the ones who typically use self-service kiosks to order from various fast-food businesses. The researcher excluded other students and employees who do not use self-service because it was limited to those who use self-service kiosks, and study or work at Olivarez College Tagaytay.

At last, future studies can expand their category for self-service kiosks or broaden the number of individuals they can include. Moreover, they should consider not only the level of consumer satisfaction with self-service kiosks, but also the level of self-service technology with online applications such as Mcdo App, Grab, or FoodPanda; they should consider if the app is challenging to use, whether consumers correct and complete orders, and if there were any app malfunctions. Gupta & Sharma (2021) assert that analysis and enhancement of technology offerings would increase customer satisfaction and lead to better satisfaction. Self-service kiosks should therefore be improved in terms of convenience based on the results, as they had the lowest weighted mean. A set of instructions for using the kiosk should be placed next to it; this will reduce confusion among users, especially among beginners. In addition, such technology is supposed to provide a search bar similar to those found in other apps, so users can quickly type in what they're

looking for. This will speed up users' ordering processes, which will lead to shorter waiting line and higher customer satisfaction.

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**Digitized School Inventory and Reservation Management System
for Olivarez College Tagaytay Bookstore**

Alab, Frix Gerald R.	Barral, Noah Alexander	De Gala, Angel Lowyza
Alcaraz, Mark KC C.	Bulawin, Dynna	Canja, Julia Ortega
Alegado, Bren Julius	Dalanon, Mike Kerby	Conteñente, Jhona Joy
Andaya, John Dominic	Dela Vega, Jaypee	Fradejas, Maxine Grace

I. Abstract

Digitized School Inventory and Reservation Management System for Olivarez College Tagaytay Bookstore is a system that includes a digital recording system as well as reservation management. The system aims to provide students with a reservation system they may use to conveniently purchase items. For the convenience of the bookstore employee, the system also provides hassle-free, accurate, and data loss-free management. The researchers used the Capstone Project as the research design since the study focuses on developing a system. A total of 20 Senior High School students, five IT experts, and one bookstore employee were selected with the use of the Quota Sampling technique. In gathering the needed data, the researchers used survey questionnaires. Also, different statistical treatments such as frequency, percentage, and weighted mean score were utilized. The evaluation's results showed that the system for the bookstore, which is used by IT experts, obtained great marks in each of the six (6) categories that were evaluated, demonstrating that the system is capable of carrying out all necessary functions and effective in terms of giving accurate information about the system, while also being considered excellent by both students and bookstore employee. Future researchers are advised to concentrate more on security since this will help them maintain and improve the system.

Keywords: inventory, reservation management, system, security, capstone project, digital

II. Introduction

Digitized School Inventory and Reservation Management System for Bookstore in Olivarez College Tagaytay is a system that provides a digital recording system with reservation management in it. The digital inventory system automatically records data, enabling the school to monitor inventory control. The system also enables the school and the student to view the remaining stock, the availability of the products, and student records on a computer dashboard. As a result, they can avoid delays and waste of time and money.

According to the interview conducted by the researchers, the bookstore's current system has a big problem. Because of the late stock or unsure amount of stock coming from the supplier, the bookstore employee was unable to update the quantity or amount of the current stock of a certain product to the students or consumers with the current system the bookstore has. That has the effect that the only information the customers or students had was the pick-up schedule, there was no guarantee that they would receive it, this led to time and money being wasted, and that is why the bookstore receives so many complaints. Based on the study by Lucas B. et al., (2019), electronic implementation increased the availability of structured anamnesis and treatment information, in conclusion, electronic implementation helps increase the development of a business.

The system's objective is to give students a convenient way to make reservations for purchases at the Olivarez College Tagaytay Bookstore. They can do so right away to guarantee that it will be in stock and available when they wish to purchase it. The product availability in the bookstore system is also visible to the users. Additionally, the system offers hassle-free accurate, and data loss-free management, which is advantageous for bookstore staff. This study can benefit the students to avoid the time they can lose if they do not get the item they wanted. It can also benefit the staff members by lessening the workload and making sure that the data is protected and can be easily accessed. As for future researchers, this study can benefit them as an additional insight to their future study, this can also help them pin out incoming issues that may occur during the current situation.

The researchers concluded that the current system at the bookstore was the main issue after conducting an interview. The employee of the bookstore is unable to inform students or customers

of the number or amount of the current stock of a certain product using the technology the bookstore currently employs. Time and money were spent because there was no guarantee that customers or students would receive the item and because they just knew the pick-up schedule, which is why the bookshop gets so many complaints. Online booking systems can help to reduce the burden and enhance overall time management, according to Tjoe (2021). In order to spend less time on customer care and more time interacting with customers, automation, and integrations are here to help.

The purpose of the system is to provide the students with a reservation system that they can use to buy items from the Olivarez College Tagaytay Bookstore without having problems. They can reserve it immediately to make sure that the item is still available or in stock, on the day they want to buy it. Also, they can track the time or day when they can get the item they bought. The students can also see the availability of the products in the bookstore system. The system also provides hassle-free accurate and data-loss-free management, which can benefit the bookstore employee. A study by Amato G et al., (nd) MILOS: A Multimedia Content Management System is flexible in the management of documents containing different types of data and content descriptions; it is efficient and scalable in the storage and content-based retrieval of these documents.

Specifically, this study aims to answer the following questions:

1. What is the level of acceptability of the Digitized School Inventory and Reservation Management System in terms of: 1.1 Functionality; 1.2 Reliability; 1.3 Usability; 1.4 Efficiency; 1.5 Maintainability?
2. What is the level of effectiveness of the Digitized School Inventory and Reservation Management System in terms of: 2.1 Functionality; 2.2 Reliability; 2.3 Usability; 2.4 Efficiency; 2.5 Maintainability; 2.6 Portability?

This study is supported by the theory of Frenken K. (2012) the technological innovation and complexity theory. Complexity theory is the study of complex and chaotic systems and how they can produce order, pattern, and structure that has had an impact on recent social science models. Most applications in the context of innovations and new technologies have focused on

technology adoption and diffusion, while the topic of the innovation process has received less attention. Three types of technological innovation complexity models: fitness landscape models, network models, and percolation models. The models can analyze complex interaction structures (between technological components, between agents engaged in the collective invention) while avoiding 'over-parameterization.' The paper concludes by discussing the remaining methodological challenges and critiques regarding the application of complexity theory.

Conceptual Framework

INPUT	PROCESS	OUTPUT
KNOWLEDGE REQUIREMENTS Must know what programming language they will use in creating their system. Know how to store and retrieve data from a database using MySQL Knowledgeable in designing a website SOFTWARE REQUIREMENTS a. Platform Visual Studio Code b. Identification PHP CSS Javascript HTML Bootstrap SQL HARDWARE REQUIREMENTS Laptop Specifications: * Processor: Intel® Core™ i5-3317U, 1.7G/2.6G, T, 3M * Operating System: Windows 8.1 * Memory: 4GB * Display/Resolution: 13.3" (1600 x 900) IPS display with wide viewing angle, 16:9 * Dimensions: 333.4 x 224.8 x 16.9 mm / 13.4x8.85x 0.66 inch * Weight: 1.54kg / 3.40lbs * Video Graphics: Intel® HD Graphics 4000 * Battery life: Greater than 8 hrs * Integrated Communication: WLAN:802.11 b/g/n, Bluetooth® 4.0	PLANNING The current inventory system is time-consuming, manual, and prone to human error, resulting in incorrect inventory counts and stock outs. SYSTEM ANALYSIS An information system to manage data and transactions related to the school and can be used by the student and the admin of the bookstore. It provides hassle-free accurate and data-loss free management which can benefit the bookstore employee. SYSTEM DESIGN Layout Flow Chart DEVELOPMENT Coding \ Programming Initial Testing IMPLEMENTATION	Effectiveness of Digitized School Inventory and Reservation Management System for Bookstore in Olivarez College Tagaytay

*Connectors: 1xUSB 2.0 , 1xUSB 3.0 , 2in1(headphone and mic)/ 3in1 (SD, MMC) card reader WIFI Specifications PLDT/GLOBE/CONVERGE/DATA	Deployment of the project	
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Figure 1. Research Framework**III. Methodology**

Researchers used the Capstone Project as the research design since the study focuses on developing a system called a Digitized School Inventory and Reservation Management System. The capstone project has evolved into a crucial component of academic programs at universities. The capstone project offers a singular chance to do independent group study and provide a creative answer to a pressing practical issue (Stephanie L., 2022).

Researchers used the Quota Sampling technique. According to Nikolopoulou (2022), Quota Sampling is a non-probability sampling method that relies on a predetermined number or proportion of units being chosen at random. Thus, the respondents of the study are twenty (20) Senior High School students in Olivarez College Tagaytay, five (5) IT experts, and one (1) bookstore employee.

The researchers asked the principal for permission to conduct this study and prepared concept notes for the dissertation supervisor and participants. Secondly, the researchers let the respondents use the system. The researchers then distributed the survey questionnaires to the respondents. Lastly, the researchers counted and analyzed the data containing the respondents' answers.

The statistical treatments that were used are frequency distributions that determine the demographic profile of the respondents. The percentage was used to get the percentage of frequency distribution per category or data set. Weighted Mean was used to determine the level of effectiveness and acceptability of the Digitized School Inventory and Reservation Management System for the Bookstore in Olivarez College Tagaytay. To arrive at a definite result, a mean score range was used.

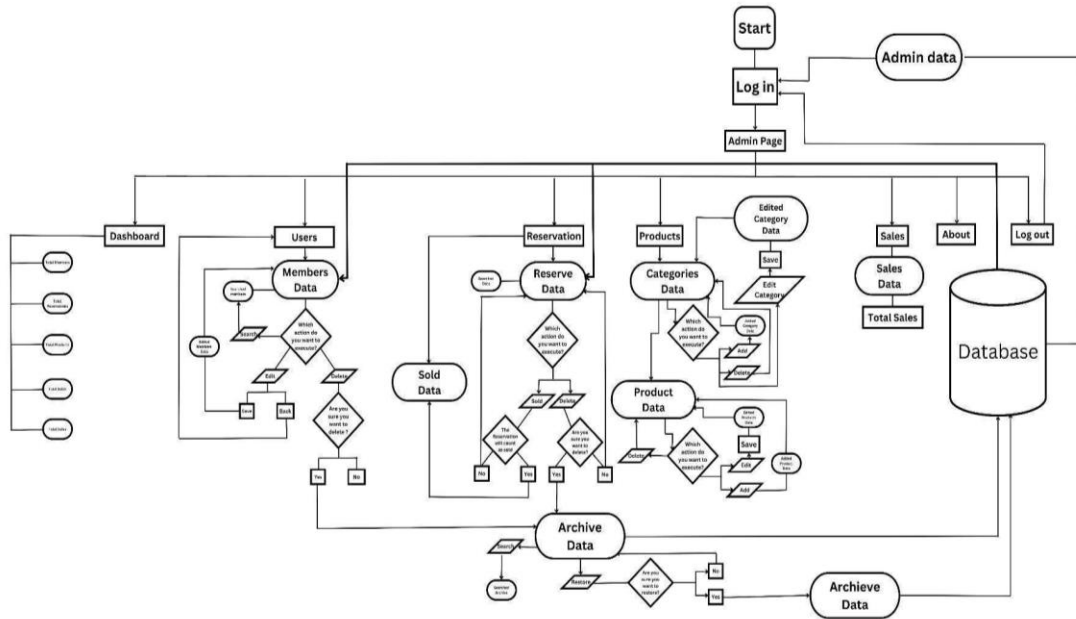


Figure 2: User Database and Figure 3: Admin Database

IV. Results

Problem 1. What is the level of acceptability of Digitized School Inventory and Reservation Management System in terms of:

- 1.1 Functionality,**
- 1.2 Reliability,**
- 1.3 Usability,**
- 1.4 Efficiency,**
- 1.5 Maintainability?**

Table 1: Level of Acceptability of the Program

Indicators:	Weighted mean	Verbal Interpretation
A. Functionality (The system will be tested if)		
1. It can perform all tasks required	3.90	Highly Acceptable
2. It can perform correct results based on its intended functions	3.86	Highly Acceptable
Total Weighted mean	3.88	Highly Acceptable
B. Reliability		
1. It meets the needs for reliability under normal operations such as inventory and reservations	3.71	Highly Acceptable
2. It provides identification and authentication of users through their username and password	3.81	Highly Acceptable
Overall Weighted Mean	3.76	Highly Acceptable
C. Usability		
1. It is appropriate for the users' need	3.76	Highly Acceptable
2. It is easy to operate based on the reservation procedure	3.81	Highly Acceptable
3. Its interface looks good and it is not stressful.	3.67	Highly Acceptable

4. Its frequently asked questions (FAQS) provide proper Information about the system	3.86	Highly Acceptable
Total Weighted mean	3.77	Highly Acceptable
D. Efficiency		
1. It provides appropriate response time, processing time, and through output rates when performing various tasks	3.76	Highly Acceptable
2. Its system has been used to perform its functions and produce its needed output in reserving items.	3.76	Highly Acceptable
Total Weighted mean	3.76	Highly Acceptable
E. Maintainability		
1. It applies changes to the entire system using its content management feature.	3.81	Highly Acceptable
2. It can identify the specific parts that shall be modified	3.76	Highly Acceptable
Overall Weighted Mean	3.79	Highly Acceptable

Table 1 presents the level of acceptability of users at Olivarez College Tagaytay. First, in terms of functionality as acceptability by users, among the two (2) specific indicators, “*It can perform all tasks required.*” attained the highest score of 3.90 which is verbally interpreted as highly acceptable while “*It can perform correct results based on its intended functions.*” attained the lowest weighted mean with the score of 3.86 but still verbally interpreted as highly acceptable. This means that the system is capable of executing all required tasks. However, executing the results depending on the desired functions comes with slight difficulty. According to Ismail et al. (2020), functionality is a critical factor that determines its adoption and usage. It should be designed to offer a wide range of functionalities that meet the needs of different users.

Second, in terms of reliability as acceptability by users, among the two (2) specific indicators, “*It provides identification and authentication of users through their username and password.*” attained the highest weighted mean with a score of 3.81, which is verbally interpreted

as highly acceptable while *“It meets the needs for reliability under normal operations such as inventory and reservations.”* attained the lowest weighted mean with the score of 3.71 but still verbally interpreted as highly acceptable. It indicates that users can be identified and authenticated using their login and password. However, there is a minor difficulty when it comes to the requirements for dependability under typical activities, such as inventory and reservations. According to Johnson & Olshavsky (2018), users found reservation confirmation emails to be helpful and informative, particularly when they contained details such as the date, time, location, and any other pertinent information.

Third, in terms of usability as acceptability by users, among the four (4) specific indicators, *“Its frequently asked questions (FAQS) provide proper.”* attained the highest weighted mean with a score of 3.81, which is verbally interpreted as highly acceptable while *“Its interface looks good and it is not stressful.”* attained the lowest weighted mean with the score of 3.67 but still verbally interpreted as highly acceptable. The usability of an interface is a crucial role in the overall user experience. This result shows that the system is easy to use for users because it has a frequently asked question (FAQS) that provides them with information about the system. However, some users find that the interface looks of the system is slightly not appealing but it is still rated as highly effective. According to Holden & Butler (2014), the system provides a collection of design principles that can be applied to create products and systems that are easy to use.

Fourth, in terms of efficiency as acceptability by users, among the two (2) specific indicators, *“It provides appropriate response time, processing time, and through output rates when performing various tasks.”* and *“Its system has been used to perform its functions and produce its needed output in reserving items.”* equally attained a weighted mean score of 3.76, making it both verbally interpreted as highly acceptable. The results show that the system is efficient at providing adequate response times, processing times, and output rates when completing various tasks. It also shows that it performs its function and produces the needed output when reserving things, both of which are highly accepted by the users. Smith & Johnson (2018) found that users are willing to tolerate longer processing times if the system provides clear and accurate feedback on its progress.

Lastly, in terms of maintainability as acceptability by users, among the two (2) specific indicators, *“It applies changes to the entire system using its content management feature.”* gained the highest score of 3.81, and *“It can identify the specific parts that shall be modified.”* gained the

lowest score of 3.76, however, they both resulted in a highly acceptable verbal interpretation. It implies that it is easier to use because of the content management feature that helps the system identify the specific parts that need to be modified which makes the system highly acceptable. However, there is a slight difficulty in identifying the specific parts that shall be modified. Atalag, et.al (2014), found that modeling alone was not sufficient to bring about improvements. It is clear how architectural variances affected maintainability across change requests when comparing relative measurements of time and software size change inside each application.

As a result of all categories, functionality obtained a total weighted mean score of 3.88, reliability gained a total weighted mean score of 3.76, usability gained a total weighted mean score of 3.77, efficiency gained a total weighted mean score of 3.76, and maintainability gained a total weighted mean score of 3.79. Therefore, all five categories are considered highly acceptable regarding verbal interpretation. This means that the digitalized school inventory and reservation management system had an overall high level of acceptability from the user's perspective, in the sense that it functions easily enough for the user to navigate and remember each button, get information through reading the Frequently Asked Questions (FAQs), identify specific parts that need to be modified because of the content management feature. According to Cipresso, et.al (2019), treatment acceptability, which is defined as the level of user satisfaction or comfort with service and willingness to utilize it, has been highlighted as a crucial factor for IBTs (Internet-Based Treatments) for ethical, methodological, and practical reasons. Moreover, acceptability includes the idea that the remedy is seen as appropriate, fair, reasonable, and non-intrusive for a certain issue.

Problem 2. What is the level of effectiveness of Digitized School Inventory and Reservation Management System in terms of: 2.1 Functionality; 2.2 Reliability; 2.3 Usability; 2.4 Efficiency; 2.5 Maintainability; 2.6 Portability?

Table 2. Level of Effectiveness of the Program

Indicators:	Weighted mean	Verbal Interpretation
A. Functionality (The system will be tested if)		

1. It can perform all tasks required	3.20	Highly Effective
2. It can perform correct results based on its intended functions	3.60	Highly Effective
Total Weighted mean	3.40	Highly Effective
B. Reliability		
1. It meets the needs for reliability under normal operations such as inventory and reservations	3.40	Highly Effective
2. It provides identification and authentication of users through their username and password	3.60	Highly Effective
Total Weighted mean	3.50	Highly Effective
C. Usability		
1. It is appropriate for the users' need	3.80	Highly Effective
2. It is easy to operate based on the reservation procedure	3.80	Highly Effective
3. Its interface looks good and it is not stressful.	3.60	Highly Effective
4. Its frequently asked questions (FAQS) provide proper Information about the system	3.80	Highly Effective
Total Weighted mean	3.75	Highly Effective
D. Efficiency		
1. It provides appropriate response time, processing time, and through output rates when performing various tasks	3.60	Highly Effective
2. Its system has been used to perform its functions and produce its needed output in reserving items.	3.60	Highly Effective
Total Weighted mean	3.60	Highly Effective
E. Maintainability		
1. It applies changes to the entire system using its content management feature.	3.20	Highly Effective
2. It can identify the specific parts that shall be modified	3.60	Highly Effective
Total Weighted mean	3.40	Highly Effective

F. Portability		
It can be accessed easily	3.80	Highly Effective
It can be updated easily	3.60	Highly Effective
It can be easily tested	3.80	Highly Effective
It can easily restore data through archiving	3.80	Highly Effective
Overall Total Weighted Mean	3.57	Highly Effective

Table 2 presents the level of effectiveness of IT experts and bookstore employees at Olivarez College Tagaytay. First, in terms of functionality, among the two (2) specific indicators, *“It can perform correct results based on its intended functions.”* attained the highest weighted mean score of 3.60 which is verbally interpreted as highly effective while *“It can perform all tasks required”* attained the lowest weighted mean with the score of 3.20 but still verbally interpreted as highly effective. The system was rated highly effective when it comes to functionality because it can perform correct results based on its intended function, however, the system is still slightly lacking its function when it comes to performing all the tasks that the system is required to do. According to the study of Salleh et al. (2017), the quality of software functionality refers to how closely it meets a given design or specific requirements. It can also be defined as the suitability of software for its intended purpose, or how it stacks up against similar products in the market.

Second, in terms of reliability, among the two (2) specific indicators, *“It provides identification and authentication of users through their username and password.”* attained the highest weighted mean score of 3.60, which is verbally interpreted as highly effective, while *“It meets the needs for reliability under normal operations such as inventory and reservations.”* attained the lowest weighted mean score of 3.40, with the result being verbally interpreted as highly effective. This means IT experts and the bookstore employee finds that the system is reliable when it comes to providing identification and authentication of users through their username and password, however, during normal operations, they may find some shortcomings when it comes to the inventory and reservation of the system. According to Johnson & Nilsson (2013), although there is a substantial body of research on quality, disagreement remains as to the effect of

reliability, or things went wrong, as opposed to customization, or things went right, on customer satisfaction with goods and services

Third, in terms of usability, among the four (4) specific indicators, *“It is appropriate for the users’ need.”*, *“It is easy to operate based on the reservation procedure.”*, and *“Its frequently asked questions (FAQS) provide proper Information about the system.”* equally attained a weighted mean score of 3.80 which is verbally interpreted as highly effective while *“It interface looks good and it is not stressful.”* attained a weighted mean score of 3.60 but still verbally interpreted as highly effective. This shows that the system is usable for the users because it is appropriate for the users’ needs, the operation procedure in reserving items is easy to use and its frequently asked questions (FAQS) provide proper information about the system that helps the user but for the looks of the interface of the system, they may not find it as good for the users but still rated as highly effective. Usability testing is an approach that involves inviting product users to carry out specific tasks to evaluate the ease of use, time taken to complete tasks, and overall experience with the product (Niranjanamurthy et al., 2017).

Fourth, in terms of efficiency, among the two (2) specific indicators, *“It provides appropriate response time, processing time, and through output rates when performing various tasks.”* and *“Its system has been used to perform its functions and produce its needed output in reserving items.”* equally attained a weighted mean score of 3.60 which makes it verbally interpreted as highly effective. The result shows that the system is efficient because when it comes in, providing appropriate response time, processing time, and through output rates when performing various tasks and performing its function and producing its needed output in reserving items, both have an equal mean and are highly effective. The concept of trust is also one of the most crucial components in developing long-term relationships with consumers, particularly with respect to upholding the confidentiality of client information and vows to consistently deliver the finest service/product. Efficiency, or skill in providing the service, and attention to consumer interest are often how trust is built between a business and its customers (Al-dweeri et al., 2017).

Fifth, in terms of maintainability, among the two (2) specific indicators, *“It can identify the specific parts that shall be modified.”* attained the highest weighted mean score of 3.60 which is verbally interpreted as highly effective while *“It applies changes to the entire system using its content management feature.”* attained the lowest weighted mean score of 3.20 but still verbally

interpreted as highly effective. The data indicates that the system is highly effective when it comes to maintainability because it can identify the specific parts that shall be modified, however, they may find a slight flaw when it applies changes to the entire system using its content management feature. Software maintainability refers to the degree of ease with which a software system or component can be altered, whether to fix errors, enhance performance, adjust to changing conditions, or modify other attributes (Chen et al., 2017).

Lastly, in terms of portability, among the six (6) specific indicators, *“It can be accessed easily.”*, *“It can be easily tested.”* and *“It can easily restore data through archiving.”* equally attained a weighted mean score of 3.80 which is verbally interpreted as highly effective while *“It can be updated easily.”* attained the lowest weighted mean score of 3.60 but still verbally interpreted as highly effective. Based on the IT experts and the bookstore employee, the system is easily accessible and can be easily tested. The data can be easily restored through archiving, so the data will not lose in case the admin accidentally deletes the data or needs the data back, however, they experience slight difficulty when it comes to updating but still verbally interpreted as highly effective. According to the study of Syamranata et al., (2019), the importance of checking portability is to assess how a new system will perform under different environmental and situational conditions. By considering the impact of changes to the system in different environments, we can ensure that any modifications will enhance both the user experience and the overall quality of the system's operation.

As a result of all categories, functionality obtained a total weighted mean score of 3.40, reliability obtained a total weighted mean score of 3.50, usability obtained a total weighted mean score of 3.75, efficiency obtained a total weighted mean score of 3.60, maintainability obtained a total weighted mean score of 3.40, portability obtained a total weighted mean score of 3.75. This means the I.T. Teachers agree on how the system may perform when it comes to performing results based on its intended function, the system can perform all tasks that are required. The system provides identification and authentication of users using their username and password. According to Zhenhai et al, (2018), book purchasers can quickly buy their favorite books. Bookstore administrators can deal with orders formed after book buyers' books for the first time and update books in bookstores in time. The development of such an APP (Application) is of great significance for economic development and is much more convenient for consumers to use.

V. Discussion

Generally, the Digitized School Inventory and Reservation Management System have a high degree of acceptance in terms of functionality, reliability, use, efficiency, and maintainability. This means that the system is capable of executing all required tasks. However, executing the results depending on the desired functions comes with slight difficulty. According to Mungara (2016), the booking procedure may now be more transparent in terms of things like the availability of slots filled and vacant, the prices paid, tax deductions, and so on. As a result, there is no need to doubt the person behind the counter extracting extra costs from you.

On the other hand, the effectiveness of the Digitized School Inventory and Reservation Management System is high in terms of functionality, reliability, use, efficiency, maintainability, and portability. According to IT experts, the system was rated as highly effective when it comes to functionality because it can perform correct results based on its function. However, the system is still slightly lacking its function when it comes to performing all the tasks that the system is required to do. The majority of software functions, according to Richard Schmidt (2013), are designed to convert inputs into an output or finished product. Instead of input, some functions will instead receive control flow.

The system, Effectiveness of Digitized School Inventory and Reservation Management System for Bookstore in Olivarez College Tagaytay S.Y 2022-2023, only focuses on the records and reservations of the products that the bookstore has. The system does not include the payment transaction. The system is only capable of reserving your desired items, and you can proceed with your payment to the bookstore. Furthermore, the system does not have a cancel option; however, the researchers provide FAQs, which state that once the reservation was confirmed, the users may not be able to cancel their reservation. For cancellation, the users are going to be directed to the registrar and request form to admin. Furthermore, the system does not support report sales and receipt printing.

The researchers are responsible for ensuring that the system does not cause harm to others or violate ethical standards. Examine problems like privacy, data security, and consent. It is essential to preserve openness and communicate freely and effectively. It is also necessary to

keep current, have a thorough grasp of the system, engage with many specialists, undertake thorough testing, and ensure ethical procedures.

The researchers recommend future researchers to focus more on security. This will enable them to manage and enhance the system, particularly in logging in since the researcher used the official Olivarez College email account to be able to login into the system. Moreover, the researchers advise utilizing student IDs for logging in and adding a super admin to the system to make it more efficient. This study can benefit them as an additional insight to their future study, this can also help them pin out incoming issues that may occur during the current situation.

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**Level of Awareness on Proper Response to Public Hazards of Senior High School Students
at Olivarez College Tagaytay S.Y. 2022-2023**

Alcedo, Mark Henry

Ambat, Fides Sophia

Barroga, Timdavid

Bawar, Fhaye Alaissah

Bono, Kyla

Caparas, Jay Christian

Caballero, Erica

Cruzada, Jemayca

Dimapilis, Zach Nicholai

Dollesin, Marvin

Enriquez, Alexa Micole

I. Abstract

Every day students are exposed to hazards and risks in public and lack the skills to respond appropriately. Unknowledgeable responses to different public hazards might lead to more dangerous disasters. In this study, the public places being described were in public transportation such as buses, jeepneys, and tricycles, in highways and streets such as roadsides, pedestrian lanes, and alleys. The purpose of this quantitative study is to determine how much awareness students have regarding a proper response to public hazards. The researchers used a quantitative-descriptive research design and stratified sampling technique that acquired 336 respondents. The researchers used self-made survey questionnaires and utilized different statistical treatments such as frequency and percentage and the weighted mean. The study revealed that the respondents were fully aware that in riding public vehicles there can be stampedes during rush hour, and the respondents' proper response is to put their bags in front of them in order for them to always check them since it is crowded. Moreover, respondents were fully aware that on highways or streets crossing the intersections and looking at the vehicles that have passed from left to right can avoid those riding in tandem who snatched phones because they were able to see that someone is suspiciously coming towards them. Overall, the study revealed that the respondents are fully aware of proper response to public hazards in terms of public transportation and highways/streets. The researchers recommend that students must apply this knowledge about proper response in public hazards by attending training sessions to enhance and maximize their skills.

Keywords: awareness, public, hazard, proper response, transportation, highways

II. Introduction

Every day students are exposed to hazards and risks in public. As defined by Collins & Stadler in the International Encyclopedia of Human Geography (IEHG, 2020), public places are central to political and social life in cities. Any enclosed area to which the public is invited or permitted, including but not limited to banks, educational facilities, health facilities, laundromats, public transportation facilities, reception areas, retail food production and marketing establishments, retail service establishments, retail stores, theaters, highways, streets, schools, places of amusement, parks, playgrounds and waiting rooms, is referred to as a public place. But in this study, the public places being described were in public transportation such as buses, jeepneys, and tricycles, in highways and streets such as roadsides, pedestrian lanes, and alleys.

On the other hand, Work Health and Safety (WHS, 2022), defined that hazard as a situation or thing that has the potential to harm a person. Public Hazard has gone to all places, whereas, transportation, on highways and streets, creates hazards. The Philippines ranked third among all of the countries with the highest hazard worldwide according to the World Risk Report (2018). Public hazards can be safety, biological, physical, ergonomic, chemical, work organization, or environmental hazards. According to the study by Leones (2015), in the Philippines, there are a number of hazards, especially in places like highways and streets. It seems to include almost all acts punishable by law that are committed on the streets. These seem to cover all types of hazards in highways and streets such as being harassed physically in vacant lots or dark alleys; being kidnapped by a car while walking or traveling; highway robbery of armored vans and similar vehicles; assault/threat; and prostitution.

Moreover, Queensland Disaster Management (QDM, 2018) defines Proper Response as the taking of appropriate measures to respond to an event, including action taken and measures planned in anticipation of, during, and immediately after an event to ensure that its effects are minimized and that persons affected by the event are given immediate relief and support. Accordingly, the response is the operationalization and implementation of plans and processes, and the organization of activities to respond to an event and its aftermath. Also, it is a fact that people cannot avoid experiencing different public hazards, but there are appropriate responses to those various public hazards. In order to deal with a situation of being harassed, tell people around

what just happened if they did not see it, and describe what the perpetrator looks like. Either take a picture of the offender or ask people around to record what is happening. However, the National Societies of the Red Cross and the Crescent are working with communities and individuals who are vulnerable to disasters and hazards to understand the dangers they face, how this affects their vulnerability, and what activities they may take to improve their safety and resilience. These include the mobilization of youth for peer education, training, and community organization through community-based disaster hazard reduction and the use of their disaster response operations as opportunities for increased hazard awareness.

Unknowledgeable responses to different public hazards might lead to more dangerous disasters. To the best of the researchers' knowledge, there are currently only limited studies that explore awareness regarding public hazards with a special focus on drivers. Therefore, in this study, the researchers aimed to determine the level of awareness regarding a proper response to public hazards among Senior High School students at Olivarez College Tagaytay. In 2020, Cave stated that ignorance of danger makes it unlikely that people will see the danger. Nowadays, students neglect to pay attention to different proper responses to various public hazards. So that many students become victims of various crimes in the Philippines such as kidnapping, harassment, and many more because some students do not have much knowledge about the public hazards that happen around them and what should be the proper responses in such situations.

The purpose of this quantitative study is to gain a better understanding and knowledge of what are the different proper responses to various public hazards. Also, it provides a clear analysis of how much awareness students have regarding a proper response to public hazards. This research will also assist students in broadening their knowledge about public hazards if the students experience some of them.

Specifically, this study answered the following questions:

1. What is the demographic profile of the respondents in terms of;
 - 1.1. Age
 - 1.2. Gender?
2. What is the level of awareness on public hazard of the respondents in terms of:
 - 2.1. Public Transportation

2.2. Highways/Streets?

3. What is the level of awareness on the proper response of the respondents in terms of:

3.1. Public Transportation

3.2. Highways/Streets

This study focuses on the different proper responses to public hazards in public transportation, highways, and streets. The public places covered by this study are public transportation such as buses, jeepneys, tricycles, highways, and streets such as roadsides, pedestrian lanes, and alleys. The respondents of this study were only Grade 11 and 12 students who are enrolled at Olivarez College Tagaytay (OCT) S.Y. 2022-2023.

This research will be beneficial to the students, teachers, school administrators and future researchers. The students will be able to know the different proper responses to help them on various public hazards. The teachers will be knowledgeable on the different proper responses and will be able to teach those to the students through the help of this study. The school administrators will be able to enhance their rules and regulations in accordance with the result of this study in order to improve the environment of the school campus and they can also implement seminars for the students about different proper responses to different public hazards. And lastly, future researchers will be able to use the result of this study for their future endeavors.

This study is anchored on the Protection Motivation Theory updated last 2017. It was developed to describe how individuals are motivated to react in a protective way towards a perceived threat and expanded to inform and improve public safety strategies in different hazards (Westcott & Ronan, et.al, 2017). Response efficacy – the belief that certain processes will mitigate the threat; and self-efficacy-an individual’s idea of their own ability to implement the required actions to mitigate the threat are elements of this framework. Protection Motivation Theory can be applied to “any threat for which there is an effective recommended response that can be carried out by the individual” (Maddux and Rogers, 2018). The Model of responding to risk, developed in the United Kingdom, incorporates the relationships among risk, hazard perception, and control. A person must have experience dealing with similar hazards or be able to anticipate the hazard in order to make an accurate response. (Barragan & Peterson, 2021). The ability to translate

awareness into effective preparedness under the pressures of an imminent threat, and to collaboratively engage with emergency responders and the community, may help to significantly level up the hazard awareness and hazard-proper response of a student.

III. Methodology

Since this study focused on knowing the awareness of SHS students toward proper response to public hazards, the researchers utilized a descriptive quantitative research design. According to McCombes (2019), it seeks to precisely and methodically describe a population, situation, or phenomenon. Furthermore, this strategy seeks to collect quantifiable data for statistical analysis of a population, a method that attempts to collect quantifiable information for statistical analysis of the population sample of the students.

In addition, the researchers used the stratified random sampling technique to have the total number of respondents. In stratified random sampling or stratification, the strata are formed based on members' shared attributes or characteristics, such as income or educational attainment. As per Parsons (2017), in which units are chosen at random from each subgroup after the population has been divided into smaller groups. According to Wu & Thompson (2020), the stratified sampling method is more practical and requires fewer resources (administrative and travel costs), and it can also provide information on clusters.

Since there is a total population of 2,096 senior high school students, the researchers used Slovin's formula to get the size of the sample which resulted in a total of 336 students, and subdivided it into four (4) different strands of SHS in grade 11 and grade 12, 72 from ABM, 28 from TVL, 121 from STEM, and 115 from HUMSS with a total of 336 students.

On the other hand, before proceeding to the data gathering, the researchers formally requested approval from the school principal through the use of a written agreement letter to conduct a survey. After getting the permission, respondents are given a consent letter to confirm their willingness to participate. Eventually, the researchers disseminate the self-made survey questionnaires through the use of Google Forms to the respondents. The data, which includes the responses of the respondents, were tabulated and analyzed.

This study utilized self-made survey questionnaires to be able to find the level of awareness in proper response to public hazards among the respondents. This survey questionnaire underwent content validation first before conducting pilot testing and reliability test using the Cronbach Alpha and yielded a score of .955 which was interpreted as excellent.

For the statistical treatment, the researchers used percentage and frequency to determine and assess the demographic profile of the respondents. In addition, categorical variables are summarized using this method. The mean score, on the other hand, is utilized to interpret the responses of the survey participants. As a result, the mean is used to establish the respondents' verbal interpretations of each statement. To arrive at a conclusive result, the researchers used the following mean score range;

Score Ranges	Quantitative Description
3.26 - 4.00	Fully Aware
2.51 - 3.25	Aware
1.76 - 2.50	Slightly Aware
1.00 - 1.75	Not Aware

IV. Results

Problem 1. What is the demographic profile of the respondents in terms of;

1.1. Age,

1.2. Gender?

Table 1.1 Age of the respondents

Age	Frequency (f)	Percentage (%)
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15-17	218	64.58%
18-20	119	35.31%
Total	336	100%

Table 1.1 shows the frequency and percentage of the age of the respondents. First, the respondents aged 15 to 17 years old were 218 or 64.58%. Second, 119 or 35.31% of the respondents were 18 to 20 years old. Last, 0% of the respondents were 21 and above years old, for a total of 336 respondents.

It implies that most of the respondents are 15 to 17 years old from grades 11 and 12 is the average age of senior high school students who are more appropriate to determine their level of awareness on proper responses to public hazards. According to the study from The Science of Adolescent Risk-Taking: Workshop Report (2011), a total of 75 percent of all deaths in the second decade of life are caused by different public hazards or dangers, it is climbing from 47 percent for 10-15-year-olds to 81 percent for 18-year-olds. The idea that many of the hazards that affect teenagers might be reduced through legislative measures is supported by trends in mortality from public hazards, which is a crucial reason to thoroughly examine risk patterns.

Table 1.2 Gender of the respondents

Gender	Frequency (f)	Percentage (%)
Female	224	66.47%
Male	112	33.33%
Total	336	100%

Table 1.2 shows the frequency and percentage of the gender of the respondents where there were 224 students or 66.47% of the respondents were female and 113 or 33.33% were male, with a total number of 336 respondents. It presents that the majority of the students in Olivarez College Tagaytay are female. Data state that proper responses to public hazards have a greater quantity for female students than males. Studies have shown that when women are in public places, they feel the most exposed to public hazards (Garofalo & Laub, 2016).

Problem 2. What is the level of awareness of public hazard of senior high students in Olivarez College Tagaytay (OCT) in terms of;

2.1. Public Transportation

2.2. Highways/Streets

Table 2.1 Level of Awareness of Public Hazards on Public Transportation

Indicators Public Hazards (Public Transportation)	Weighted Mean	Verbal Interpretation
1. There can be pickpocketing on public transport.	3.48	Fully Aware
2. There can be stampedes during rush hour to catch up with public utility vehicles.	3.54	Fully Aware
3. There can be bag slashing while riding public utility vehicles.	3.38	Fully Aware
4. There can be jewelry snatching from robbers outside public utility vehicles amidst traffic jams.	3.44	Fully Aware
5. There can be capturing video/picture under someone's skirt or dress inside the public transport.	3.51	Fully Aware
6. There can be Covid-19 virus transference while in public vehicles.	3.50	Fully Aware
7. There can be a sudden slip in the rush to get off the PUV that unloads passengers in the middle of the road.	3.28	Fully Aware
Average Weighted Mean	3.45	Fully Aware

Table 2.1 presents the level of awareness of senior high students in public hazard on public transportation. In terms of the public hazard in public transportation among the seven (7) specific indicators, “*There can be stampedes during rush hour to catch up with public utility vehicles.*” attained the highest weighted mean of 3.54 with the verbal interpretation of fully aware, while “*There can be a sudden slip in the rush to get off the PUV that unloads passengers in the middle*

of the road.” attained the lowest weighted mean of 3.28. Although lowest, it was still interpreted as fully aware. It presents that respondents are much more aware that during rush hours, PUVs are hard to catch and lead to stampedes and they know the possibility of slipping suddenly when a passenger gets off the PUV in the middle of the road.

According to Horn and Berktold (2023), approximately 86 percent of senior high and college students are defined as commuter students, and mostly what they encounter is waiting for PUVs that can be ridden especially during rush hour.

Table 2.2 Level of Awareness in Public Hazards on Highways/Streets

Indicators - Public Hazards (Highways/Streets)	Weighted Mean	Verbal Interpretation
2. There can be phone snatching or riding in tandem asking directions.	3.50	Fully Aware
3. There can be an encounter with a person who shows their private parts.	3.24	Aware
4. There can be a truck bumper hit due to poor visibility in highways in times of bad weather conditions on pedestrian crossing.	3.41	Fully Aware
5. There can be a car sideswipe due to lack of proper pedestrian sidewalk area.	3.36	Fully Aware
6. There can be an unexpected motorcycle collision when breaking at a yellow light signal while crossing the road.	3.40	Fully Aware
7. There can be a motorcycle changing lanes that could hit while crossing the intersection.	3.46	Fully Aware
Average Weighted Mean	3.41	Fully Aware

Table 2.2 presents the level of awareness of senior high students in public hazards on highways/streets. In terms of the public hazard in highways/streets among the seven (7) specific indicators, *“There can be phone snatching or riding in tandem asking directions.”* attained the highest weighted mean of 3.50 with the verbal interpretation of fully aware, while *“There can be an encounter with a person who shows their private parts.”* attained the lowest weighted mean of 3.24. Although lowest, it was still interpreted as ‘aware’. It presents that senior high school

students are aware that snatching phones is possible while riding in tandem and are pretending to ask directions, rather than having an encounter with someone who shows private parts.

According to Kevin Mahaffey, co-founder, and chief technology officer of Lookout, mostly what people experience having their cell phone stolen while they are walking or doing something by those who suddenly appear to snatch the cell phone or by those riding in tandem and 68 percent of those victims are unable to ever recover their device after the theft occurred.

Problem 3. What is the level of awareness on the proper response of senior high students in Olivarez College Tagaytay (OCT) in terms of;

3.1. Public Transportation

3.2. Highways/Streets

Table 3.1 Level of Awareness on Proper Response on Public Transportation

Indicators - Proper Response (<i>Public Transportation</i>)	Weighted Mean	Verbal Interpretation
1. Putting my bag in front of me allows me to check it regularly.	3.75	Fully Aware
2. Adapt other travel route preferences or take a ride on the terminal instead of the PUV loading area.	3.35	Fully Aware
3. Report the incident to the nearby police station as soon as possible.	3.51	Fully Aware
4. Get public attention to report the crime to the police ASAP and try to describe the snatcher accurately.	3.43	Fully Aware
5. Adjust your sitting position (close legs) or try to move to another seat.	3.64	Fully Aware
6. Do proper mask wearing, sanitizing, and physical distancing measures.	3.66	Fully Aware

7. Wait to get off from the public transport once it stops in the designated unloading area.	3.65	Fully Aware
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Average Weighted Mean	3.57	Fully Aware
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Table 3.1 presents the level of awareness of senior high students in proper response to public transportation. The highest weighted mean on the proper response in public transportation of the respondents is 3.75. First, in terms of the learning objectives among the seven (7) specific indicators, *“Putting my bag in front of me allows me to check it regularly.”* attained the highest rating while *“Adapt other travel route preferences or take a ride on the terminal instead of the PUV loading area.”* attained the lowest rating. Although lowest, it was still interpreted as ‘fully aware’.

It shows that their proper response is to put the bags in front of them to always check it, rather than look for another ride or go to the PUVs terminal instead of the loading area. According to the study by Safework NSW (2017), identifying the hazard and assessing the possible danger that might happen right away, can help you to avoid it if you know what the right thing to do is.

Table 3.2 Level of Awareness in Proper Response on Highways/Streets

Indicators	Weighted Mean	Verbal Interpretation
IV. Proper Response (Highways/Streets)		
1. Keep your head upright and make eye contact then immediately request nearby law enforcement assistance.	3.42	Fully Aware
2. Answer a stranger's inquiry in a safe distance while vigilantly securing my valuable things.	3.41	Fully Aware
3. Cautiously step back then immediately ask assistance from a nearby law enforcer to intervene.	3.45	Fully Aware
4. Locate the truck's blind spot and wait for a gap in traffic that allows enough time to cross safely.	3.43	Fully Aware

5. Capture car plate number then walk facing traffic as far from traffic as possible if there is no appropriate sidewalk.	3.36	Fully Aware
6. Continue watching for traffic while crossing on the pedestrian lane with safe distance from vehicles.	3.53	Fully Aware
7. Cross streets at intersections and look for cars in all directions, including those turning left or right.	3.58	Fully Aware
Average Weighted Mean	3.45	Fully Aware

Table 3.2 presents the level of awareness of senior high students in proper response on highways/streets. The highest weighted mean of the proper response in highways/streets of the respondents is 3.58. First, in terms of the learning objectives among the seven (7) specific indicators, *“Cross streets at intersections and look for cars in all directions, including those turning left or right.”* attained the highest rating while *“Capture car plate number then walk facing traffic as far from traffic as possible if there is no appropriate sidewalk.”* attained the lowest rating. Although lowest, it was still interpreted as ‘fully aware’.

The result presents that senior high school students prefer to cross intersections and look at passing cars from the left or right as their proper response, rather than take a photo of a car's number plate and walk facing traffic as much as possible if there is no sidewalk. According to the statistics of the Roadside Safety Research Program of the Federal Highway Administration (FHWA, 2018), roadside accidents accounted for more than 50% of all traffic fatalities.

Based on the result, all of the categories have means interpreted as fully aware. These results show that the students of the Senior High School of Olivarez College Tagaytay have enough knowledge of public hazards, especially proper responses to these.

V. Discussion

Overall, the study revealed that the respondents are fully aware and knowledgeable about the level of awareness in proper response to public hazards in terms of public transportation and highways/streets. Furthermore, the researchers concluded that the majority of the respondents were between 15-17 years old, it may seem that the most affected by the hazards are teenagers. Also,

most of the respondents are females, studies have shown that when women are in public places, they feel the most exposed to public hazards. The study revealed that the SHS students in OCT were fully aware that there can be stampedes during rush hour so the respondents' proper response is to put their bags in front of them so they can always check them since it is crowded, it is inevitable that there may be a robbery while waiting for transportation. Also, the SHS students were fully aware that crossing the intersections and looking at the vehicles that have passed from left to right can avoid those riding in tandem who snatched phones because they were able to see that someone was coming towards them. Moreover, despite the fact that the school is situated in a rural area, senior high school students are ready, aware, adapted, and prepared for the different hazards, because senior high school students are more experienced in drills and seminars than their juniors and more mature and knowledgeable.

This study has addressed only the level of awareness of senior high school students at Olivarez College Tagaytay S.Y. 2022-2023. To clarify, this analysis has only concentrated on the level of awareness of proper response to public hazards of the respondents. Although the researchers did get samples from all strands of senior high school, they were not able to gather data from other respondents since the study is only limited to the Grade 11 & 12 students since the students are in face-to-face classes and mostly engaged in public places.

With all these mentioned, researchers highly recommend conducting related studies that will support the study which is the level of awareness on the proper response to public hazards of senior high students at Olivarez College Tagaytay. With the help of conducting other related studies, will be helpful in finding and knowing other results with regards to the study. Based on the findings, the senior high students must also enhance those specific indicators under the several public hazards in the category of public transportation and highways/streets. The researchers recommend that students must apply this knowledge about the proper response to public hazards by doing some training to enhance their skills in this regard, not just knowledge since they are already aware of these. Also, this study recommends orientation and seminars in schools for students about enhancing what they know even more since they are already aware and knowledgeable. Seminars can be conducted so that the students have more in-depth knowledge regarding the proper response to public hazards.

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**The Effectiveness of YouTube in Developing Practical Skills of TVL-HE Students
in Olivarez College Tagaytay S.Y. 2022-2023**

**Bergado, Raffael
Develos, Francesca
Galano, Timboy
Pomarejos, Shane**

**Lucero, Cris
Miranda, Russell
Millang, Ryan**

**Irene, Oreste
Panganiban, Joseph
Paor, Jasmine**

I. Abstract

YouTube is a video-sharing platform that provides a diverse range of videos on a variety of topics and content, including academics. However, YouTube is well-known for being a free site that allows users to freely post videos, some videos contain both violent and false content. Particularly if they are looking for a correct and reliable source of information, the purpose of this study is to determine how effective YouTube is in Developing Practical Skills. The researchers used a quantitative-descriptive research design. A total of 142 respondents were selected with the use of a universal sampling technique. In gathering the needed data, the researchers used an adapted questionnaire and distributed it through google forms. Furthermore, different statistical treatments were utilized such as frequency, and percentage, to determine the demographic profile of the respondents, and weighted mean score to interpret the response of the respondents. The result revealed that the respondents had a very effective experience when using YouTube as their learning tool to develop their practical skills. Specifically, the respondents genuinely believe that YouTube is beneficial when it comes to academic purposes and capable of helping them to develop their skills. It is recommended that they should be cautious when selecting videos to ensure that the information presented is accurate and reliable for their needs.

Keywords: YouTube and education, practical skills, academic purposes, TVL-HE students,

II. Introduction

YouTube is a platform that has grown in popularity in recent years. Google acquired it in 2006 after it was discovered in 2005. It is now one of Google's subsidiaries. It is a platform that provides a diverse range of videos on a variety of topics and contents, including academics. YouTube, with its vast library of video tutorials and step-by-step guides, provides a wealth of information and resources to learners seeking to gain practical skills and knowledge. As YouTube has grown in popularity as a source of information, learners from all over the world can access YouTube content from anywhere and at any time, allowing them to learn at their own pace and on their own schedule. Tvl He is designed to develop students' skills useful for livelihood projects at home. In particular, in the field of Tvl He, practical skills are an essential component of the curriculum, for the reason that practical video lessons, in most cases, offer information and knowledge that will allow students to easily learn when they can see the process being demonstrated visually, practical skills are a type of activity that requires special training and knowledge to perform the duties efficiently.

According to Dunn (2011), YouTube is one of the largest resources for educational content ever created. It is accessible from anywhere with an internet connection, making it simple to access tutorials and learn new skills from the comfort of your own home. Furthermore, YouTube has a diverse range of content creators who specialize in various fields, which means that learners can find videos that are tailored to their specific needs and interests. Furthermore, the interactive nature of YouTube allows learners to interact with content creators and fellow learners, fostering a sense of community and collaboration. According to Chang (2012), the use of YouTube for academic purposes also presents potential problems. One of the main issues is the lack of quality control over the content. Since anyone can upload videos on YouTube, there is a risk of misinformation and biased content. Additionally, students may be distracted by the vast amount of non-academic content available on the platform, which can negatively impact their academic performance. As a result, it is important to note that not all content on YouTube is accurate. Students should exercise caution when selecting videos to ensure that the information presented is accurate and up to date.

Teaching practical skills requires the use of precise instructions to allow learners to follow the process and then repeat the skill, whether within a traditional educational institution or via

distance learning. According to Lindstrom (2011), students have a higher level of understanding of a subject when they see, hear, and produce materials during lessons (75%) than students who only see during instruction (20%). Understanding key concepts requires visualization, which highlights the visual nature of video as a useful learning tool. Furthermore, YouTube is the most popular social media service used by students for school-related practical work.

The present study focused on determining the Effectiveness of YouTube in Developing the Practical Skills of TVL HE Students in Olivarez College-Tagaytay. The purpose of this study is to determine the Effectiveness of YouTube in Developing the Practical Skills of TVL- HE Students in Olivarez College-Tagaytay. The researchers chose to focus only on TVL-HE Students, for the reason that they are the only ones who are engaged in their field and that their field is designed to develop skills useful for livelihood projects at home.

This study is conducted to determine The Effectiveness of YouTube in Developing the Practical Skills of TVL-HE Students at Olivarez College Tagaytay. Based on the research background described, the researchers formulated the problem statement. Specifically, this study aims to answer the following questions:

1. What is the demographic profile of the respondents in terms of?
 - a. Age
 - b. Sex
2. What is the level of effectiveness of YouTube in developing practical skills in terms of?
 - a. Pre-Cooking
 - b. Cooking
 - c. Post-Cooking
3. Based on the results, what are the recommendations of the researchers?

The study is based on the theoretical support of Chen's (2010) Impact of YouTube on skills development, which states that the content of YouTube was an effective tool for learning skills. The study also found that learners who used YouTube had a higher level of self-efficacy and motivation. The image and symbols help the student consumers to develop their practical skills

and comprehension of each topic. Incorporating words symbols sounds and pictures enable students to learn because it allows them to process skills.

This study will be able to contribute research-based data and knowledge about the Effectiveness of YouTube in Developing the Practical Skills of TVL-HE Students at Olivarez College Tagaytay. More specifically, this study shall be beneficial to the following groups. This study will aid the school in assisting teachers on how they can use YouTube as a learning tool for their students. This study will enlighten teachers that a teacher-made YouTube video playlist will be useful for students' practical skills. This study will benefit the students to make use of YouTube to develop their practical skills and abilities to easily understand the content lesson discussed by the teachers. Lastly, for future researchers, the study contributes to research data that will assist future researchers in understanding both the positive and negative aspects of YouTube on students' development skills.

III. Methodology

This study employed the Effectiveness of YouTube in Developing Practical skills of TVL-HE Students in Olivarez College-Tagaytay, quantitative descriptive research design is used for describing individuals, events, or conditions by studying them as they are in nature.

The researchers used a convenience sampling technique to gather the necessary data. According to Julia (2019), it is a method wherein the researchers chose their sample based solely on convenience. To test the hypothesis of this research. A total population of 142 TVL HE Students participated in answering the survey questionnaire. From Grade 11, there are a total of 88 respondents from the sections Pearl and Aquamarine. For Grade 12, there are a total of 54 respondents from the sections Cassiopeia and Centaurus.

The researchers used an adapted-modified questionnaire from the study of Donkor (2011). The survey was used to determine the Effectiveness of YouTube in Developing the Practical Skills of TVL-HE Students. The survey is composed of 20 indicators. It underwent validity and reliability testing which resulted in Cronbach's Alpha score of .930 verbally interpreted as Excellent.

For the procedure, the researchers requested permission from the principal to conduct this study and the researchers prepared a consent paper for the research adviser and participants. After being approved, the researchers prepared adapted-modified questionnaires that underwent pilot testing for validity and reliability testing and after having the result, the questionnaires is distributed to the researchers, Afterwards, the researcher tallied and analyzed the data that contained the responses of the respondents.

The statistical treatment that is used are percentage and frequency distribution, which were used to assess and evaluate the demographic profile of the respondents while weighted mean score is used to provide more information than a simple average without requiring much additional information to unveil The Effectiveness of YouTube in Developing Practical Skills of TVL-HE Students in Olivarez College Tagaytay.

Scale Range	Qualitative Description
3.26-4.00	Very Effective
2.51-3.25	Effective
1.76-2.50	Slightly Effective
1.00-1.75	Not Effective

IV. Results

Problem 1. What is the demographic profile of the respondents in terms of?

1.1 Age

1.2 Sex

Table 1.1 Age of the respondents

Age	Frequency (f)	Percentage (%)
6	45	32.2%
17	46	33.3%
18	44	31.9%
19	4	2.9%
20	2	1.4%
21	1	0.7%
Total	142	100%

Table 1.1 shows the frequency and percentage of the age of the respondents. First, 45 or 32.2% of the respondents were 16 years old. Second, 46 or 33.3% were 17 years of age. Third, 44 or 31.9% of the respondents were 18 years old. Fourth, 4 or 2.9% were 19 years of age. Fifth, 2 or 1.4% of the respondents were 20 years of age. Lastly, only 1 or 0.7% were 21 years old students. The outcome reveals that most students were 17 years old, which is the average age of grade 12 respondents. Overall, the researchers successfully accumulated its target respondents of one hundred forty-two (142) students. According to Guo et al. (2014), the age of 16 to 17 is the time when adolescents have greater freedom in choosing content that is reliable for their tasks at school.

Table 1.2 Gender of the respondents

Gender	Frequency (f)	Percentage (%)
Female	83	61%
Male	59	43%
Total	142	100%

Table 1.2 shows the frequency and percentage of the gender of the respondents. It shows that 83 or 61% of the respondents were female and 59 or 43% were male, with a total number of 142 respondents. It presents that the majority of the grade 12 respondents in Olivarez College Tagaytay are females. Researchers reveal that grade 12 respondents have a greater quantity of female students. According to Cross (2017), research shows that generally, females have more experience when it comes to using YouTube for tutorials and academic-related topics. It means that men access YouTube for entertainment purposes rather than academic ones.

Problem 2. What is the level of effectiveness of YouTube in developing practical skills in terms of?

1.3 Pre-Cooking

1.4 Cooking

1.5 Post-Cooking?

Table 2 Level of Effectiveness of YouTube in Developing Practical Skills of TVL-HE Students

Indicators	Weighted Mean	Verbal Interpretation
A. Pre-Cooking		
1. Improve my cleaning and organization capabilities in the kitchen areas.	3.37	Very Effective
2. Increase my capacity to maintain order and cleanliness in the kitchen	3.26	Very Effective

3. Sharpen my ability to select the proper ingredients for a dish	3.46	Very Effective
4. Improve my kitchen multitasking skills.	3.38	Very Effective
5. Enhance my knife abilities in a consistent manner.	3.41	Very Effective
6. Improve my menu-planning abilities.	3.33	Very Effective
7. Help my understanding of the process used to keep food from being contaminated during preparation	3.42	Very Effective
Average	3.37	Very Effective
B. Cooking		
1. Improve my cooking technique in a cold kitchen	3.31	Very Effective
2. Master my cooking technique in a hot kitchen	3.43	Very Effective
3. Enhance my marble straining practice activity	3.30	Very Effective
4. Increase my ability to cook at a safe temperature	3.44	Very Effective
5. Build up my grilling abilities	3.28	Very Effective
6. Polish my five modern sauce making skills	3.41	Very Effective
7. Enhance my abilities in measuring ingredients and matching labels on the recipe	3.27	Very Effective
8. Enhance my carving and filleting abilities	3.38	Very Effective
Average	3.35	Very Effective

B. Post-Cooking

1. Increase my ability to set a formal table setting.	3.21	Effective
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2. Expand my comprehension of how to keep food from becoming contaminated during table-setting preparation	3.27	Effective
3. Improve the quality of my understanding of food presentation methods	3.22	Effective
4. Raise my awareness of the importance of keeping food at a safe internal temperature	3.28	Very Effective
5. Expand my understanding of how to handle food waste	3.27	Effective
Average	3.25	Effective
Overall Average	3.32	Very Effective

Table 2 presents the level of effectiveness of YouTube in developing the practical skills of TVL-HE students at Olivarez College Tagaytay. First in terms of Pre-Cooking, among the Seven (7) specific indicators, “sharpen my ability to select the proper ingredients for a dish” attained the highest weighted mean score of 3.46 Which is verbally interpreted as very effective while “increase my capacity to maintain order and cleanliness in the kitchen” attained the lowest weighted mean score of 3.26 Although lowest, it was still verbally interpreted as very effective. Therefore, the students show that they had learned practical skills through YouTube and they had successfully applied the skills they learned in real-life situations. However, there are tendencies of some students who still can see videos that have a lack of quality control over the content which can lead to misinformation and biased perspective. According to Kim (2010), YouTube is accessible anywhere with an internet connection, making it easy to access tutorials and learn new skills. However, little attention had given to the potential role of youtube especially in the context of students understanding.

Secondly, in terms of Cooking, among the eight (8) specific indicators, “increase my ability to cook at a safe temperature” attained the highest weighted mean score of 3.44 which is verbally interpreted as Very effective while, “enhance my abilities in measuring ingredients and match labels on the recipe” attained the lowest weighted mean score of 3.27 which is still verbally interpreted as very effective.

Lastly, in terms of Post-Cooking, among the five (5) specific indicators, “Raise my awareness of the importance of keeping food” attained the highest weighted mean score of 3.28 which is verbally interpreted as Very effective while “Increase my ability to set a formal table setting” attained the lowest weighted mean score of 3.21 Which is verbally interpreted as effective. The data implies that students who used YouTube had higher levels of self-efficacy and motivation than those who did not. The study by Lai (2011) found that learners who use YouTube had higher engagement and flexibility in their skills than those who don't use it.

Table 3 Overall Effectiveness of YouTube in Developing Practical Skills of TVL-HE Students

Categories	Weighted Mean	Verbal Interpretation
Pre-Cooking	3.37	Very Effective
Cooking	3.35	Very Effective
Post-Cooking	3.25	Effective
Average	3.32	Very Effective

Table 3 shows the overall categories result of the Effectiveness of Youtube in Developing Practical Skills of TVL-HE Students in Olivarez College Tagaytay. As seen in the table, the data shows that Pre-Cooking achieved the highest weighted mean score of 3.37 which is verbally interpreted as very effective. On the other hand, Cooking achieved the highest weighted mean score of 3.35 which is verbally interpreted as very effective while. Post-Cooking achieved the highest weighted mean score of 3.25 which is verbally interpreted as effective. This means that Pre-Cooking, Cooking, and Post-Cooking are both effective in developing the practical skills of TVL-HE Students. Generally, the Effectiveness of YouTube in Developing Practical Skills of TVL-HE Students in Olivarez College Tagaytay was verbally interpreted as “Very Effective” with a weighted mean score of 3.32 which means that the TVL-HE Students in Olivarez College Tagaytay states that using YouTube is a very effective tool in Developing Practical Skills.

V. Discussion

Overall, the study revealed that the respondents have a higher understanding when there is provided visual demonstration with the use of YouTube. Students also proved that they're engaged in academics when using YouTube as their learning tool for developing practical skills. It aligns with the study of Chucas (2010) that no matter what skill you want to learn, there's a good chance you can find a tutorial or demonstration on YouTube that will show them how to do it effectively.

On the other hand, Pre-Cooking was verbally interpreted as very effective with a weighted mean score of 3.37. Therefore, the student show that they had learned practical skills through YouTube and they had successfully applied the skills they learned in real-life situations. According to Kim (2010), YouTube is accessible anywhere with an internet connection, making it easy to access tutorials and learn new skills. However, little attention had given to the potential role of youtube especially in the context of students understanding. Furthermore, Cooking was verbally interpreted as very effective with a weighted mean score of 3.35 while Post-Cooking was verbally interpreted as effective with a weighted mean score of 3.25. The data implies that students who used YouTube had higher levels of self-efficacy and motivation than those who did not. In the study by Lai (2011) found that learners who use YouTube had higher engagement and flexibility in their skills than those who don't use it.

To clarify, the focus of this study was solely determining the Effectiveness of YouTube in Developing Practical Skills of TVL-HE Students in Olivarez College Tagaytay S.Y 2022-2023, The respondents were only TVL-HE Students, for the reason that they are the only ones who are already taking on the job training and they are convenient for the researchers to determine the effectiveness of YouTube in developing practical skills of TVL-HE students in Olivarez College-Tagaytay.

With the abovementioned, the researchers recommend the school to utilize YouTube as a learning tool for the students. This recommendation will help students and teachers to use YouTube to add more information and skills that will help them easily understand the purpose of the lesson being discussed. Future researchers may consider conducting qualitative research to determine the effectiveness of YouTube in developing practical skills for TVL-HE Students, which will allow them to gain a better understanding of why YouTube is helpful and effective when it comes to academic purposes.

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Be the Copycat: The Level of Acceptability of Beetroot Vegan Meat Ham as an Alternative for Regular Meat Ham

Azura, Nicole

Cadayday, Marjorie

Cron, Patricia Joy

Hernandez, Shen Claire

Flores, Charlene Mae

Immotna, Febe Anne

Imperial, Allyanna Marie

Dimapilis, Maica Ella Maurine

I. Abstract

This study aims to determine the Level of Acceptability of Beetroot Vegan Meat Ham as an Alternative to Regular Meat Ham. The researchers used a quantitative experimental research design. Senior High School Students respondents were selected using the stratified sampling technique. Furthermore, the researchers used a matrix survey questionnaire and distributed it through Google Forms. Researchers utilized statistical treatments such as frequency, percentage, and weighted mean score. On the other hand, the survey results suggest that the selected Senior High School students in Olivarez College Tagaytay find the Beetroot Vegan Meat Ham to be acceptable in terms of taste, appearance, texture, and aroma. The researchers recommend taking a thorough and thoughtful approach to your research. Conduct in-depth studies on specific ingredients and combinations to ensure that your vegan meat ham is both delicious and nutritious. Collaborate with other experts in the field and seek feedback from consumers to refine and improve your product. By following these recommendations, you can create a vegan meat ham product that is appealing, healthy, and accessible to a wide range of consumers.

Keywords: Beetroot, Ham, Vegan, Vegan Meat, Imitation, Regular Meat Ham, Mimic, Alternative, Meat Consumption

II. Introduction

Meat consumption is one of the problems people have been encountering for many years and also meat prices have risen significantly (Gonzalez et.al, 2020 & Torella, 2022). In both men and women, long-term consumption of increasing amounts of red meat, particularly processed meat, is associated with an increased risk of total mortality, cardiovascular disease, colorectal cancer, and type 2 diabetes (Richi et.al, 2015). These seen trends can have major health and environmental consequences (Riddel et.al, 2020). Food choice is strongly intertwined with human health and the environment. Excessive meat consumption is frequently viewed as harmful (Curtain and Grafenauer, 2019).

Beetroots were commonly used in juices (Patel, 2022). Beetroot is rich in fiber and protein, but low in calories. All of these properties can help you balance your energy intake and improve the quality of your diet (Coyle, 2021). An alternative plan or offer is different from the one that you already have and can be done or used instead (Collins, 2022). Changing the ingredients to healthy ingredients can have a big difference in diet. Beetroot Vegan Meat Ham is exactly a copycat of Regular Meat Ham but in a much better way. Beetroot Vegan Meat Ham will only use plant-based ingredients that will only imitate real meat's nutritional value. Calories are one of the reasons why the body produces fats, that's why many vegans and dieters always say that "Count your Calories". However, Plant-based meat is not quite as rich in certain vitamins and minerals as meat. Protein, zinc, and vitamin B12 levels are all higher in meat, which means a diet with plant-based meat may benefit from being supplemented with other sources of nutrients. In addition, being a good supply of protein, beetroot is also a good source of nutritious carbs, fiber, minerals, and vitamins. Beetroot can also imitate the redness meat has (Nardi, 2021). Moreover, vegan meat contains no animal ingredients; rather, it is a type of food that is completely free of animal-derived products but is intended to imitate the texture and taste of meat (Huguelet, 2022). A vegan diet, also known as veganism, excludes animal products for ethical, health, or environmental reasons. This is a way of life that avoids all forms of animal exploitation and cruelty as much as possible. In addition to not eating meat, they chose not to consume dairy, eggs, or any other animal-derived products (Petre, 2022).

The purpose of this study is to identify the level of acceptability of Beetroot Vegan Meat Ham as an alternative to Regular Meat ham, how it will reduce meat consumption, and to promote

a healthy lifestyle. Imitating the nutritional value of a regular meat ham by using beetroots, soybeans, and bread flour as the main ingredients. Imitation is a neutral concept; it can be imitated positively or negatively. The value of imitation is determined by both the model being imitated, where the model made reference to something, and the quality of that model's example, as well as whether the imitation is rivalrous or non-rivalrous (MimeticTheory, 2020).

This study is beneficial to dieters, homemade cooks, food vloggers/bloggers, and restaurant owners. This study can be beneficial to dieters who want to eat meat without actually eating meat. Homemade cooks or food bloggers who want to share and promote a healthy lifestyle. Restaurant owners that want alternatives to their menu. This study can also be the foundation of the students or the next generation's study about vegan meat.

This study aims to identify the level of acceptability of Beetroot Vegan Meat Ham as an Alternative to Regular Meat Ham. Specifically, this seeks to answer the following:

1. What is the demographic profile of the respondents in terms of:

1.1 Age

1.2 Gender

1.3 Strand

2. What is the level of acceptability of Beetroot Vegan Meat Ham among the selected Senior High School students in terms of:

2.1 Taste

2.2 Appearance

2.3 Texture

2.4 Aroma

3. Which among Beetroot Vegan Meat Ham and Regular Meat ham is preferable in terms of:

3.1 Taste

3.2 Appearance

3.3 Texture

3.4 Aroma

This study is anchored from the theory titled “A Practice Theory Framework for Understanding Vegan Transition”. A shift in the social norm of meat consumption is a transition that is repeatedly called for in climate change policy discourse. Meat consumption can harm our environment, especially the greenhouse. Meat consumption contributes to the release of greenhouse gases such as methane, CO₂, and nitrous oxide. These gases contribute to climate change, such as global warming. Livestock farming contributes to emissions of greenhouse gases in several ways: Forest ecosystem destruction, livestock raising, decaying manure, and fertilizer use. Meat consumption is one of the problems the researchers see while conducting this research. Eating meat can lead to excessive meat consumption that leads to harm to our environment (Twine, 2017). That is why researchers made Beetroot Vegan Meat Ham because it can somehow help the environment, as well as human health. Researchers will only use plant-based ingredients like beetroot vegetables, paprika powder, garlic powder, etc. Nourishment choice is emphatically connected with human well-being and the well-being of our environment, with over-the-top meat utilization regularly seen as inconvenient for both variables.

To effectively comprehend the procedure of conducting this invention, a research model that is shown in Figure 1 displays the system approach, the Input – Process – Output model. The input includes the study's respondents which are the Senior High School Students at Olivarez College Tagaytay, ingredients that will be included in Beetroot Vegan Meat Ham, as well as the problems associated with meat consumption. The process includes data collection through the use of survey questionnaires and will be conducted via Google Forms. The researchers also used percentage, frequency, and mean scores for the data analysis. The future outcome of this research is the Beetroot Vegan Meat Ham as an alternative to Regular Meat Ham, as well as the level of acceptability among students at Olivarez College Tagaytay.

III. Methodology

The researchers' research design is quantitative experimental. An experimental study is one that strictly follows a scientific research design. It includes a hypothesis and a variable that can be changed by the researcher, variables that can be measured, calculated, and compared by the researcher. Most importantly, experimental research is carried out in a controlled setting (Harnald, 2016). The researchers collected data and the results either supported or rejected the

hypothesis. The researchers used the design to invent beetroot vegan meat ham as an alternative to regular meat ham.

The researchers used the Stratified Sampling Technique in this study. In addition, the researchers used Slovin's formula to calculate the sample population. This method of selecting respondents is appropriate because it allows researchers to quickly generate a sample that best represents the whole population that is being studied. The Senior High School students at Olivarez College Tagaytay were divided into groups based on their strand. There will be 4 groups: grade 11 and grade 12 students from ABM, HUMSS, STEM, and TVL strands. The researchers selected 150 students from each strand to serve as their respondents.

The researchers used a survey questionnaire. It is a type of instrument that is used to properly arrange the information. It is also utilized to decrease some errors and double-check some information. This survey questionnaire format will be the matrix questionnaire method. It is a collection of multiple-choice questions presented in the form of a grid of rows and columns. The rows contain the questions, and the columns provide a set of predefined answer options for each question in the row. Frequently, the answer options are presented on a scale (Pollfish, 2021). The researchers also find it easier to use for gathering data because respondents will just "check" the column.

The researchers wrote a letter to the principal requesting permission to conduct a survey of target respondents. After obtaining consent, the researchers distributed the Google Form link for the survey questionnaires and tabulated the results. Finally, the researchers investigated the problem by computing the percentage. The weighted mean and frequency percentage and frequency were used to determine the demographic profile of the respondents, while the weighted mean was used to determine the responses. In order to arrive at a definitive interpretation of the findings, the researchers calculated scores and mean ranges for a scale.

Researchers conducted an experiment about the acceptability of Beetroot Vegan Meat Ham as an alternative to regular Meat Ham. First, the researchers created a vegan meat ham out of plant-based ingredients, primarily beetroot. Following this, the researchers conducted an experiment in which they tested the acceptability of Beetroot Vegan Meat Ham by distributing survey questionnaires to selected senior high students at Olivarez College Tagaytay. Finally, after the respondents have eaten the Beetroot Vegan Meat Ham, they answered the survey questionnaire

given by the researchers. Each of the respondents evaluated the taste, aroma, texture, and appearance of the product.

Beetroot Vegan Meat Ham Ingredients

30g	Beetroot powder
25g	Soybean powder
500g	Bread flour
1tsp	Mushroom powder
2 tbsp	Soy sauce
¼ cup	Sugar
2 tbsp	Red wine
2 tbsp	Hot sauce
½ tsp	Onion powder
¼ tsp	Garlic powder
½ tsp	Mustard powder
	Water

The list above shows the ingredients and measurements of Beetroot Vegan Meat Ham that is used in this experiment. The researchers spent many days looking for the perfect recipe to be inspired by Beetroot Vegan Meat Ham and finally found one from the content creator Sauce Stache.

This is the procedure that the researchers came up with for making the beetroot vegan meat ham. The researcher used the WTF (Wash that flour) Method. First, make a dough ball with bread flour, beetroot powder, soybean powder, and water, then place it in a bowl with water, cover it, and set aside for about an hour. After resting, remove the dough ball from the water and begin rinsing it. Rinse until the water is colored pink. Second, for seasonings, researchers mixed in 1 teaspoon black pepper, 1/2 teaspoon paprika, 1/2 onion powder, 1/4 teaspoon garlic powder, 1/2 teaspoon mustard powder, and 1/2 teaspoon mushroom seasoning. The researchers also ensured that all of the seasoning is evenly distributed and that all of the flavors are combined. Allow this to sit for an additional hour. Third, when the dough is looking good, the gluten within it has rearranged itself. Fourth, on medium heat, fry the dough in a generous amount of oil. Fry it continuously, getting a nice crispy skin on both sides, until it looks exactly like regular ham. Fifth,

cover the frying pan and leave it to simmer for 30 to 40 minutes and then remove it from the heat. Finally, Wrap it up, place it in the fridge, and leave it there overnight. Finally, thinly slice it like ham. At this point, it still needs to be reheated once more. Cook this in a broth. 1/4 cup of sugar, 1/8 tablespoon of soy sauce, 2 tablespoons of hot sauce, and 1/8 cup of red wine. Allow it to simmer for about 20 minutes before serving.

Frequency distribution, percentage, and mean were used as statistical treatments. The frequency distribution was determined by the respondent profile by counting the number of times each variable occurs, such as the number of males and females in the sample. The frequency distribution was used to summarize categorical variables as well.

The percentage of frequency distribution per category or data set was calculated using percentage. Mean was used to interpret the respondents' verbal responses in each statement.

IV. Results

Problem 1. What is the demographic profile of the respondents in terms of:

1.1 Age,

1.2 Gender,

1.3 Strand

Table 1.1 Age of the Respondents

Age	Frequency (f)	Percentage (%)
16	122	18.91%
17	239	37.05%
18	207	32.09%
19	77	11.94%
Total	645	100%

The frequency and percentage of respondents by age are shown in Table 1.1. To begin, there were 122 respondents aged 16 or 18.91% of the total. Second, 37.05% of the 239 respondents were under the age of 17. Third, 207 or 32.09% of the total respondents were under the age of 18. Finally, 77 11.94% of the total respondents were under the age of 19. According to the table, the majority of students in Grade 11 and Grade 12 at Olivarez College Tagaytay are between the ages of 17 and 18, which is the proper age range for a Senior High School student. The youth are driving the movement; nearly half of all vegans (42%), compared to only 14% of those over 65, are between the ages of 15 and 34. When the Guardian asked respondents if they were vegan, 67% of the 474 who responded were under the age of 34, with more than one-sixth being teens (Marsh, 2026).

Table 1.2 Gender of the Respondents

Gender	Frequency (f)	Percentage (%)
Male	348	53.95%
Female	279	46.05%
Total	645	100%

Table 3 shows the frequency and percentage of respondents by gender, with 348 students, or 53.95% of the respondents being female, and 297 students, or 46.05% of the respondents being male, for a total of 645 respondents. According to the table, the majority of the students who tried our product in grades 11 and 12 at Olivarez College Tagaytay are female. According to the data, the number of female respondents is higher than the number of male respondents, implying that there are more female than male students at Olivarez College Tagaytay. There are 52.13% or 110 females and 47.87% or 101 males, implying that they have more female respondents than males (Capinding's study, 2021).

Table 4. Strand of the Respondents

Strand	Frequency (f)	Percentage (%)
TVL	152	23.57%
STEM	175	27.13%
HUMSS	165	25.58%
ABM	152	23.72%
Total	645	100%

Table 1.3 shows the frequency and percentage of the strand of each respondent. First, the respondents from the ABM strand were 152 or 23.72%. Second, 175 respondents, or 27.13% were in the STEM strand. Third, 165 respondents, or 25.58% were from the HUMSS strand. Lastly, 152 respondents, or 23.72% were from the TVL strand. The table above shows that Grade 11 and 12 STEM strands have more tasted our product than the other strands in Olivarez College Tagaytay. STEM students predominantly hold a growth mindset with fixed ideas which promotes learning goals, allows for healthier responses to challenges and failures, and promotes resilience, effort, and hard work (Racela et al. 2022).

Problem 2. What is the level of acceptability of Beetroot Vegan Meat Ham among the selected Senior High School students in terms of:

2.1 Taste

2.2 Appearance

2.3 Texture

2.4 Aroma

Table 2. Level of acceptability of Beetroot Vegan Meat Ham among the selected Senior High School students in terms of: Taste, Appearance, Texture, Aroma

Indicators (Taste)	Weighted Mean	Interpretation
Sweetness and Spiciness of Beetroot Vegan Meat Ham.	3.72	Strongly Acceptable
Saltiness of Beetroot Vegan Meat Ham.	3.56	Strongly Acceptable
Juiciness of Beetroot Vegan Meat Ham.	3.65	Strongly Acceptable
Complementary of Beetroot as a Vegan Meat Ham.	3.69	Strongly Acceptable
Overall Weighted Mean	3.67	Strongly Acceptable
Indicators (Appearance)	Weighted Mean	Interpretation
The shape of Beetroot Vegan Meat Ham	3.64	Strongly Acceptable
The color of Beetroot Vegan Meat Ham made it look appetizing.	3.61	Strongly Acceptable
The size of Beetroot Vegan Meat Ham.	3.61	Strongly Acceptable
The way of presentation of Beetroot Vegan Meat Ham was served nicely.	3.64	Strongly Acceptable
The Beetroot Vegan Meat Ham aesthetic is good.	3.63	Strongly Acceptable
Overall Weighted Mean	3.62	Strongly Acceptable
Indicators (Texture)		
The tenderness of Beetroot Vegan Meat Ham.	3.68	Strongly Acceptable
The juiciness of Beetroot Vegan Meat Ham.	3.61	Strongly Acceptable
The thinness of Beetroot Vegan Meat Ham.	3.66	Strongly Acceptable
The doneness of Beetroot Vegan Meat Ham.	3.67	Strongly Acceptable
Overall Weighted Mean	3.65	Strongly Acceptable

Indicators (Aroma)	Weighted Mean	Interpretation
The savory adds an extra aroma in Beetroot Vegan Meat Ham.	3.66	Strongly Acceptable
The appetizingness adds aroma in Beetroot Vegan Meat Ham.	3.70	Strongly Acceptable
The palatable smell of Beetroot Vegan Meat Ham.	3.67	Strongly Acceptable
Overall Weighted Mean	3.69	Strongly Acceptable

Table 2 shows the acceptability of Beetroot Vegan Meat Ham among the selected Senior High School students in terms of Taste, Appearance, Texture, and Aroma. The weighted mean score was calculated based on the responses from the students, where a higher score indicates a higher level of acceptability. First, the taste indicator, the survey evaluated the sweetness, spiciness, saltiness, savory taste, juiciness, and the complementary flavor of Beetroot Vegan Meat Ham. The total mean score for this indicator was 3.67%, which indicates that the students strongly agreed that the taste of the Beetroot Vegan Meat Ham was acceptable. Second, the appearance indicator evaluated the shape, color, size, presentation, and aesthetic of the Beetroot Vegan Meat Ham. The total mean score for this indicator was 3.62%, which indicates that the students strongly agreed that the appearance of the Beetroot Vegan Meat Ham was acceptable. Third, the texture indicator evaluated the tenderness, juiciness, thinness, and doneness of the Beetroot Vegan Meat Ham. The total mean score for this indicator was 3.65%, which indicates that the students strongly agreed that the texture of the Beetroot Vegan Meat Ham was acceptable. Lastly, the aroma indicator evaluated the savory, appetizing, and palatable smell of the Beetroot Vegan Meat Ham. The total mean score for this indicator was 3.69%, which indicates that the students strongly agreed that the aroma of the Beetroot Vegan Meat Ham was acceptable. One Poll Study revealed that 68% of the respondents expressed their willingness to substitute meat with a plant-based option as long as it has a similar taste to meat. On the other hand, 47% of the participants in the same survey expressed their reluctance to try plant-based meats because they doubt it will taste like meat. However, significant efforts have been made to imitate the delicious and savory meat-eating experience (Shafer, 2023). Overall, the survey results suggest that the selected Senior High School students in Olivarez College Tagaytay find the Beetroot Vegan Meat Ham to be acceptable

in terms of taste, appearance, texture, and aroma.

Problem 3. Which among Beetroot Vegan Meat Ham and Regular Meat Ham is preferable in terms of:

3.1 Taste

3.2 Appearance

3.3 Texture

3.4 Aroma

*Table 3. Preferability of Beetroot Vegan Meat Ham and Regular Meat Ham in terms of:
Taste, Appearance, Texture, Aroma*

Indicators (Taste)	Weighted Mean	Interpretation
The sweetness and spiciness of Beetroot Vegan Meat Ham is more preferable than the Regular Meat Ham.	3.67	Strongly Preferable
The saltiness of Beetroot Vegan Meat Ham is better than Regular Meat Ham.	3.58	Strongly Preferable
The savory Beetroot Vegan Meat Ham is much better than Regular Meat Ham.	3.64	Strongly Preferable
Beetroot Vegan Meat Ham is much juicier than the Regular Meat Ham.	3.61	Strongly Preferable
Beetroot Vegan Meat Ham uses vegetables as the main ingredient, unlike Regular Meat Ham which uses animals.	3.68	Strongly Preferable
<i>Overall Weighted Mean</i>	3.63	Strongly Preferable
Indicators (Appearance)	Weighted Mean	Interpretation
The shape of Beetroot Vegan Meat Ham is much preferable than the Regular Meat Ham.	3.60	Strongly Preferable
The color of Beetroot Vegan Meat Ham is better than the Regular Meat Ham	3.60	Strongly Preferable
The size of Beetroot Vegan Meat Ham is more	3.62	Strongly Preferable

than the Regular Meat Ham.

The aesthetic of Beetroot Vegan Meat Ham is much better than the Regular Meat Ham.	3.62	Strongly Preferable
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Presentation of Beetroot Vegan Meat Ham was more pleasing than the Regular Meat Ham.	3.64	Strongly Preferable
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<i>Overall Weighted Mean</i>	3.62	Strongly Preferable
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Indicators (Texture)	Weighted Mean	Interpretation
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The tenderness of Beetroot Vegan Meat Ham is more tender than the Regular Meat Ham.	3.65	Strongly Preferable
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The juiciness of Beetroot Vegan Meat Ham is more juicy than the Regular Meat Ham.	3.62	Strongly Preferable
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The thinness of Beetroot Vegan Meat Ham than Regular Meat Ham.	3.66	Strongly Preferable
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The doneness of Beetroot Vegan Meat Ham.	3.65	Strongly Preferable
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<i>Overall Weighted Mean</i>	3.64	Strongly Preferable
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Indicators (Aroma)	Weighted Mean	Interpretation
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The savory adds an extra aroma in Beetroot Vegan Meat Ham than the Regular Meat Ham.	3.69	Strongly Preferable
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The appetizingness aroma in Beetroot Vegan Meat Ham than the Regular Meat Ham.	3.64	Strongly Preferable
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The palatable smell of Beetroot Vegan Meat Ham is much better than the Regular Meat Ham.	3.69	Strongly Preferable
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<i>Overall Weighted Mean</i>	3.68	Strongly Preferable
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Table 3 presents the Preferability of Beetroot Vegan Meat Ham and Regular Meat Ham in terms of: Taste, Appearance, Texture and Aroma. The weighted mean score was calculated based

on the responses from the students, where a higher score indicates a higher level of preferability. First, for the taste indicator, the survey evaluated the sweetness, spiciness, saltiness, savory taste, juiciness, and the use of vegetables as the main ingredients of beetroot vegan meat ham rather than regular meat ham. The total mean score for this indicator was 3.63%, which indicates that the students strongly preferred the taste of the beetroot vegan meat ham over regular meat ham. Second, the appearance indicator evaluated the shape, color, size, presentation, and aesthetic of the beetroot vegan meat ham compared to a regular meat ham. The total mean score for this indicator was 3.62%, which indicates that the students strongly preferred the appearance of the beetroot vegan meat ham over regular meat ham. Third, the texture indicator evaluated the tenderness, juiciness, thinness, and doneness of the beetroot vegan meat ham. The total mean score for this indicator was 3.64%, which indicates that the students strongly preferred the texture of the beetroot vegan meat ham over regular meat ham. Lastly, the aroma indicator evaluated the savory, appetizingness, and palatable smell of the beetroot vegan meat ham compared to regular meat ham. The total mean score for this indicator was 3.68%, which indicates that the students strongly preferred the aroma of the beetroot vegan meat ham over regular meat ham. Overall, the survey results suggest that the selected senior high school students at Olivarez College Tagaytay find the beetroot vegan meat ham to be preferable to regular meat ham in terms of taste, appearance, texture, and aroma.

V. Discussion

This study revealed that the Senior High School students in Olivarez College Tagaytay strongly accepted and strongly preferred the Beetroot Vegan Meat Ham better than the Regular Meat Ham. Many respondents tried the Beetroot Vegan Meat Ham wondering how powdered and floured products can turn into meat, and unexpectedly, the respondents liked it and wondered if the researchers would sell it. Almost half of the participants in the survey expressed their reluctance to try plant-based meats because they doubt it will taste like meat. However, significant efforts have been made to imitate the delicious and savory meat-eating experience. Bread Flour and Beetroot Powder are the first main ingredients that the researchers used but later on realize that adding more protein will mimic the meat more. Adding the Soybean powder helped to mimic meat in terms of its nutritional value. The researchers chose three (3) main ingredients which are Bread Flour, Beetroot Powder, and Soybean Powder. These three (3) main ingredients contain a

lot of protein which is perfect to use to mimic meat.

In the first attempt at cooking Beetroot Vegan Meat Ham, the researchers made the mistake of washing the dough repeatedly which led to the dough being crushed. But still, the researchers continued cooking the Beetroot Vegan Meat Ham and saw the result not being good enough because the dough became hard. The second attempt was more successful because the researchers only washed the dough once, enough to remove some starch. It made the Beetroot Vegan Meat Ham mimic the Regular Ham more but the researchers changed the flavor to sweet and spicy. The sweetness can help to balance out the heat, creating a more nuanced flavor experience. The third and final attempt was great. The Beetroot Vegan Meat Ham became a better version of Regular Meat Ham. The researchers achieved the imitation of Regular Meat Ham but with more flavor.

Overall, the findings indicated a positive and negative outlook on the making of Beetroot Vegan Meat Ham. A lot of trials happened while doing this experimental research. As a result, researchers decided to try again with different ingredients as suggested by the experts, and it was successful, and the experts and the respondents provided positive feedback that led to the researchers' conclusion that the level of Acceptability of Beetroot Vegan Meat Ham as an Alternative to Regular Meat Ham was high. This analysis has concentrated on the Level of Acceptability of Beetroot Vegan Meat Ham as an Alternative to Regular Meat Ham. The findings revealed that the Beetroot Vegan Meat Ham is much more acceptable and preferable than Regular Meat Ham in terms of Taste, Appearance, Texture, and Aroma.

The researcher's recommendation for future researchers is first, to explore the use of a variety of plant-based ingredients beyond the typical soy, wheat, or pea protein. This could include experimenting with ingredients like lentils, chickpeas, or even jackfruit, which can provide a different texture and flavor profile to vegan meat ham. Second, consider the use of natural flavorings and seasonings such as herbs and spices, to give vegan meat ham a unique and appealing taste. Consider adding vegetables and fruits to add additional nutritional value and flavor. Third, be mindful of the cost of ingredients, especially if the product will be in the market. Finding cost-effective ingredients that still provide the desired flavor and texture can help make vegan meat ham more accessible to a wider range of consumers. Fourth, prioritize the nutritional value of the vegan meat ham. Remove the carbs as much as possible. Consider adding nutritional supplements or fortifications to your product to ensure that it provides a balanced and healthy

option for consumers. Finally, take a thorough and thoughtful approach to your research. Conduct in-depth studies on specific ingredients and combinations to ensure that the vegan meat ham is both delicious and nutritious. Collaborate with other experts in the field and seek feedback from consumers to refine and improve the product. By following these recommendations, you can create a vegan meat ham product that is appealing, healthy, and accessible to a wide range of consumers.

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**Level of Awareness Toward Online Scams among Senior High School Students of
Olivarez College Tagaytay**

**Araza, Jayzell Zaireen S.
Benitez, Airis G.
Blanco, Irish P.**

**Calusin, John Angel B.
Colibao, Alyssa B.
Dacquel, Maria Cristina C.**

**Miñon, Christelle Ann D.
Reyes, Keith Justine J.
Vidallo, Mark Kian M.**

I. Abstract

Online scam is a common concern that all people encounter online, as the internet is used by more than four billion people globally, dependence on the internet could lead to a range of issues, including negative consequences. Specifically, students commonly fall victim to online scams, due to this, they are five times more likely to be a victim than the general public. With that, the purpose of this study is to determine the level of awareness toward online scams among Senior High School students of Olivarez College Tagaytay. The researchers utilized a quantitative descriptive research design with stratified sampling technique to acquire 337 respondents while using a self-made questionnaire to gather data. Meanwhile, percentage, frequency, and mean were used to analyze the data. The study revealed that students are aware of identity theft schemes that can occur by clicking on unfamiliar links and delivering sensitive information through emails that are not secured, also the deceptive strategies employed by perpetrators through phishing emails, including fake testimonials, recommendations, and reviews online utilized to exploit them. Furthermore, students are aware of the impact of their social status on marketplace scams, specifically fake online stores that sell perfect products at low prices to deceive the targeted victims. Overall, the study revealed that students are aware of the fraudulent schemes that they may encounter online. The researchers recommend students to get the opportunity to attend seminars or training regarding the different strategies to avoid online scams which enables them to exercise appropriate actions to prevent themselves from falling victim to online scams.

Keywords: students, online scams, awareness, pressure, opportunity, rationalization

II. Introduction

Online scam is a common concern that all people encounter online. As the internet is used by more than four billion people globally (Clement, 2020), it may be where scams take place since internet access has become a necessity for everyone to utilize in their daily lives (Reglitz, 2020). Online scams, which generally refer to internet services or software that defraud or take advantage of victims for financial gain, continue to evolve and can vary widely (Stouffer, 2022). Additionally, online scams are changing and come in a variety of forms; phishing scams, ransomware, scareware, fake shopping websites, cryptocurrency scams, social media scams, and mobile scams are some of them. On the other hand, online shopping has grown in popularity among both companies and consumers as a more cost-effective and convenient means of shopping (Baluch, 2022). One of the best examples of scams on the internet is online shopping scams, which involve using social media platforms to set up fake online stores. Online shopping scams involve scammers who use the internet to trick anyone into buying fake or counterfeit items or paying for services that do not exist (Mohd Khaliza, 2019).

Young adults are most likely to use at least one social media site (Pew Research Center, 2019). However, despite their heavy internet and social media use, students rarely “read laterally” to evaluate the quality of the information they encounter online (McGrew et al., 2018). That is, students do not try to identify the original sources of claims, examine the persons and/or groups making the claims, or verify the accuracy of claims using fact-checking websites, online searches, or online databases (Wineburg & McGrew, 2017). For instance, students commonly fall victim to online scams, due to this, they are five times more likely to be a victim than the general public (Weisman, 2022).

With an increase in online shopping scams, customers must be cautious in giving personal information, which is partially due to a lack of education in online security awareness, poor usage of personal security devices, and an uncultured mentality (Tang, 2019). Individuals who often use the internet must be alert and ensure that their online activities are safe (Wang, 2018).

The purpose of this study is to determine the level of awareness towards online scams among Senior High School students of Olivarez College Tagaytay (OCT). This may also help in minimizing the number of people who are unaware of online scams.

This study aims to answer the following questions:

1. What is the demographic profile of the Senior High School students at Olivarez College Tagaytay in terms of:
 - 1.1 Age
 - 1.2 Sex
 - 1.3 Strand
2. What is the level of awareness towards online scams among Senior High School Students of Olivarez College Tagaytay in terms of:
 - 2.1 Opportunity
 - 2.2 Pressure
 - 2.3 Rationalization

This study is limited to Grade 11 and Grade 12 Senior High School students of Olivarez College Tagaytay (OCT) in all strands.

Given the importance of the internet in their life today, the findings of this study will help senior high school students avoid falling victim to online scams. It may also assist parents in guiding their children when they use the internet. As well as assisting teachers who fill in for parents while their students are at school. This could also help with future studies.

This study is anchored to the theory of "Fraud Triangle " developed by Cressey in 1953 as a model for explaining the factors that cause someone to commit occupational fraud (Nugrahaa & Susantob, 2018). It consists of three components that, together, lead to fraudulent behavior: Pressure (the incentive that motivates one to commit fraud), Opportunity (the circumstances that allow fraud to occur), and Rationalization (the justification for committing fraud). The researchers were able to create a self-made questionnaire that determines persons' knowledge of fraud by knowing the activities of someone conducting fraud.

III. Methodology

This section describes the data collection and analysis methods used in the study. It consists of the research design, participants of the study, sampling strategy, data collection, analysis procedure, and statistical statement.

In this study, a Quantitative Descriptive design was used to describe the level of awareness of Grade 11 and Grade 12 Senior High School students in all strands. With this, quantitative methods emphasize objective measurements and statistical, mathematical, or numerical analysis of data gathered through polls, questionnaires, and surveys, or by modifying pre-existing statistical data with computing tools, Babbie et. al., (2010).

The 2,096 total population of Grade 11 and Grade 12 Senior High School students from 43 sections in all strands were divided using the Stratified Sampling technique. Moreover, Slovin's formula was utilized to determine the sample size of the respondents. As a result, the appropriate number of participants was computed as $n = N / (1 + Ne^2)$, which leads to 336 overall respondents upon calculation. Additionally, based on the resulting value of the population, the sample statistic of the students in each section also achieved a 7.81 estimation.

Therefore, the researchers distributed survey questionnaires to 25 sections in Grade 11 with a stratum of 8 students from Alexandrite, Jasper, Aquamarine, Emerald, Spinel, Turquoise, Zircon, Ruby, Garnet, Opal, Obsidian, Peridot, Sapphire, Jade, Sardonyx, Pearl, Diamond, Tourmaline, Onyx, Topaz, Quartz, Amethyst, Crystal, Carnelian, and Hyacinth.

On the other hand, the researchers also distributed survey questionnaires to 18 sections in Grade 12 with a stratum of 8 students from Aquila, Rigel, Cassiopeia, Hercules, Libra, Pisces, Taurus, Aquarius, Orion, and Vega. Meanwhile, Andromeda, Centaurus, Leo, Phoenix, Lyra, Vela, Virgo, and Scorpius have 7 students only per strata.

The researchers used a self-made survey questionnaire as a research instrument through the use of Google Forms to draw out proper responses to the objectives of this research. In this case, the series of questions are formulated along with the study of Dove (2021) "The Psychology of Fraud, Persuasion, and Scam Techniques" as the basis of the questionnaire.

Furthermore, the title of this study was checked, revised, and rechecked to maintain conformity with the student participants. With this, the reliability statistics were interpreted as excellent, which implies that the survey items are reliable. Thus, the permit to gather statistical data was secured by a permission letter from the principal of Olivarez College Tagaytay (OCT). The researchers also seek to learn about the level of awareness of Senior High School students towards online scams after conducting the survey.

Frequency distribution statistical methods were used to determine the demographic profile of the respondents and summarize categorical variables. The rate of frequency distribution for each category or data set can be calculated using the percentage. The verbal interpretation of the respondents in each statement is evaluated using the mean. The mean score range is also implemented to determine the outcome of the research.

Scale Range	Quantitative Description	Interpretation
3.26-4.00	Strongly Agree	Fully Aware
2.51-3.25	Agree	Aware
1.76-2.50	Disagree	Slightly Aware
1.00-1.75	Strongly Disagree	Unaware

III. Results

Problem 1. What is the demographic profile of the Senior High School students at Olivarez College Tagaytay in terms of:

1.1 Age,

1.2 Sex

1.3 Strand

Table 1.1 Age of the respondents

Age	Frequency (f)	Percentage (%)
15	1	.3%
16	87	25.89%
17	142	42.26%
18	90	26.79%
19	13	3.87%
20 and above	3	0.89%
Total	336	100%

Table 1.1 shows the frequency and percentage of the age of the respondents, wherein there were 142 or 42.26% of the respondents were 17 years old. Those under the age of 15 received 1 or.3% of the respondents. Therefore, it presents the fact that those students in grades 11 and 12 at Olivarez College Tagaytay who are over the age of 17 are more likely to be aware of online scams. According to the study by Macha (2018), he also stated that the average age of Senior High School students is 16 to 18 years old, which is more suited to measuring their level of knowledge about online scams.

Table 1.2 Sex of the respondents

Sex	Frequency (f)	Percentage (%)
Female	211	62.8%
Male	125	37.20%
Total	336	100%

Table 1.2 shows the frequency and percentage of respondents by gender, with 211 students, or 62.8% of the respondents being female, and 125 students, or 37.20% male, for a total of 336 respondents. Therefore, shows that the vast majority of responders were female. As stated in the study, the European Union Agency for Cybersecurity (ENISA 2019) found that women were more inclined to utilize security features and be cautious about sharing personal information online. In another study by the Better Business Bureau (2018), women were shown to be more likely than men to identify and report online scams.

Table 1.3 Strand of respondents

Strand	Frequency (f)	Percentage (%)
ABM	66	19.64%
STEM	117	34.82%
HUMSS	104	30.95%
TVL – HE	26	7.74%
TVL – ICT	23	6.85%
Total	336	100%

Table 1.3 shows the frequency and percentage of the strand of each respondent, wherein there were 117 respondents or 34.82% from the STEM strand which got the highest weighted mean. While the lowest weighted mean is from TVL-ICT which got 23 respondents or only 6.85%. As a result, the STEM strand has the highest average frequency of senior high school students from Olivarez College Tagaytay, who are more qualified to measure knowledge of Internet Scams. According to Potgieter's (2019) study, learners should also be prepared and aware of data protection interventions to avoid becoming a victim of online scams due to the obvious differences in students' awareness of online scams across the five strands, with STEM students having the most apprehension.

Problem 2. What is the level of awareness towards online scams among Senior High School Students of Olivarez College Tagaytay in terms of:

2.1 Opportunity

2.2 Pressure

2.3 Rationalization

Table 2.1 Level of Awareness towards Online Scams among Senior High School Students of Olivarez College Tagaytay in terms of Opportunity

Indicator	Weighted mean	Verbal Interpretation
Opportunity		
1. I am aware that viruses can be used by online scams to steal my personal data.	3.10	Aware
2. I am aware that young consumers are frequently victims of scams due to their curiosity and urge to belong.	2.99	Aware
3. I am aware that responding to suspicious emails makes online scams obtain my personal information.	3.07	Aware
4. I am aware that signing up to various websites may result in identity theft when hacked.	3.03	Aware
5. I am aware that young people who have recently joined the internet community are most likely to be vulnerable to online scams.	2.91	Aware
6. I am aware that social media platforms are hunting grounds for online scams that attack young consumers.	2.95	Aware
7. I am aware that using a weak password or the same password for multiple accounts might scam me into giving someone else access to my other accounts.	2.98	Aware
8. I am aware that if young consumers fall victim to online scam, they may become even more desirable to other scams.	2.88	Aware
Overall Weighted Mean	2.99	Aware

The level of awareness towards online scams among Senior High School students of Olivarez College Tagaytay in terms of opportunity are shown in Table 2.1. The category got the total weighted mean of 2.99 and was described as “aware”. The first indicator, “*I am aware that viruses can be used by online scams to steal my personal data.*” got the highest weighted mean of 3.10 and was described as “aware” while the eighth indicator, “*I am aware that if young consumers fall victim to an online scam, they may become even more desirable to other scams.*” got the lowest weighted mean of 2.88 and was also described as “aware”. The results showed that most students are aware that online scams can utilize viruses to steal someone's personal information. In the same way, students are more likely to think that it is unsafe to click on unrecognized links and not to send sensitive information in emails without encryption as stated by Berre et.al (2022).

Table 2.2 Level of Awareness towards Online Scams among Senior High School Students of Olivarez College Tagaytay in terms of Pressure

Indicator - Pressure	Weighted Mean	Verbal Interpretation
1. I am aware that in scams, they evoke victims with persuasion techniques to make instant decisions (e.g., one-day offers) for ridiculously low-priced products.	2.90	Aware
2. I am aware that in online scams, the swindlers try to reach consumers through phone calls to persuade them repeatedly.	2.83	Aware
3. I am aware that in scams, they may use any indications of limited time with urgency cues to persuade victims to act quickly.	2.86	Aware
4. I am aware that scammers exploit young consumers' kindness and good nature as their advantage.	2.93	Aware
5. I know that in online scams, they threaten consumers with arrest or penalties if they do not comply with requests from authorities.	2.78	Aware
6. I am aware of the practice of checking facts before transferring funds (e.g., fundraising campaigns)	3.00	Aware
Overall Weighted Mean	2.40	Aware

The level of awareness towards online scams among Senior High School students of Olivarez College Tagaytay in terms of Pressure are shown in Table 2.2. The category got the total weighted mean of 2.40 and was described as “aware”. There are six (6) indicators under the category of Pressure. The sixth indicator gained the highest weighted mean of 3.00 which is *“I am aware of the practice of checking facts before transferring funds (e.g., fundraising campaigns)”* and was described as “aware”. However, the fifth indicator, *“I know that in online scams, they threaten consumers with arrest or penalties if they do not comply with requests from authorities.”*, got the lowest weighted mean of 2.78 yet was still interpreted as “aware”. It implies that students are aware of the practice of fact-checking before sending money.

Table 2.3 Level of Awareness towards Online Scams among Senior High School Students of Olivarez College Tagaytay in terms of Rationalization

Indicator - Rationalization	Weighted Mean	Verbal Interpretation
1. I am aware that in scams, the perpetrators deceive victims by posing as legitimate online shop sellers to gain profit.	2.93	Agree
2. I am aware that scams, evoke visceral influence to steal my identity information with free prizes or fake accounts.	2.95	Agree
3. I know that in online scams, they exploit social influence including faking testimonials and reviews, by creating fake social media accounts.	2.95	Agree
4. I am aware that scams, primarily attack young consumers' social status to gain profit from the internet.	2.98	Agree
Overall Weighted Mean	2.36	Aware

The level of awareness towards online scams among Senior High School students of Olivarez College Tagaytay in terms of Rationalization are shown in Table 2.3. The Rationalization category got the total weighted mean of 2.36 and was described as “aware”. There are four (4) indicators and the fourth one which is *“I am aware that online scams, they primarily attack young consumers' social status to gain profit from the internet.”* got the highest weighted mean of 2.98 interpreted as “aware” while the first indicator, *“I am aware that in online scams, the perpetrators deceive victims by posing as legitimate online shop sellers to gain profit.”*, got the least weighted

mean of 2.93 and was also described as “aware”. The results indicate that students are aware that their social status is the primary target of online scams. Crane et. al. (2019) pointed out in their study that people may actually be more susceptible to various temptations as a result of their very own personal characteristics.

Table 2.4 Level of Awareness towards Online Scams among Senior High School Students of Olivarez College Tagaytay in terms of Categories

Indicator	Weighted Mean	Verbal Interpretation
Opportunity	2.99	Agree
Pressure	2.40	Agree
Rationalization	2.36	Agree

Table 2.4 displays the level of awareness among the three categories. The total weighted mean for all categories was 2.58. The opportunity category with the highest weighted mean of 2.99 was interpreted as "agree". The findings indicated that students are aware of the potential ways used by fraudsters to commit fraud. According to the research study by Button et al. (2019), by increasing students' knowledge and assisting in a better understanding of how and with whom students engage, online scams may be decreased. Rationalization, on the other hand, received the lowest weighted mean of 2.36 and yet still was characterized as "agree". This shows that students are aware that scammers justify their illegal actions by telling themselves that they are doing something worthwhile to help other people. In the statement of Forbes Article (2019), scammers believe that doing online scams are actually ethical.

V. DISCUSSION

Overall, the findings of this study indicate that students are aware of fraudulent practices they may encounter while accessing the internet in terms of the Opportunity, Pressure, and Rationalization categories. According to the results of the Opportunity category, Senior High School students are aware of identity theft schemes that can occur by clicking on unfamiliar links or delivering sensitive information through emails that are not secured. Moreover, the Pressure

category reveals that students are aware of the deceptive strategies employed by perpetrators through phishing emails, including fake testimonials, recommendations, and reviews online utilized to exploit them regardless of their age. Furthermore, the data in the Rationalization category is regarded as aware, indicating that students are aware of the impact of their social status on marketplace scams, specifically fake online stores that sell too-good-to-be-true products at low prices to deceive the targeted victims.

However, the researchers only focused on the level of awareness towards online scams among Senior High School students in Olivarez College Tagaytay (OCT) due to the increasing number of cases of online scams that can vary widely and contribute to the benefit of the Senior High School students to avoid falling victim to these scams that usually occur on the internet. This research is also limited to online scams such as identity theft, phishing, and marketplace scams, which commonly target students nowadays. Additionally, students can protect themselves from fraudulent activities by familiarizing themselves with online scams and their effects on the victims.

Although the researchers demonstrated that Triangle Fraud – Opportunity, Pressure, and Rationalization – significantly affects the level of awareness of Senior High School students towards online scams, the study regarding physical scams executed through calls or texts should be conducted for future research to see if the Senior High School students are also aware of the other scams and its factors that may influence them to fall for these fraudulent strategies.

The findings indicate that students are aware of becoming more vulnerable to various online scams. So, the researchers suggest that students should take appropriate actions to prevent themselves from falling victim to online scams. An alternative technique they may employ is the double authentication method to protect their valuable information from theft of personal data and illegal access.

Moreover, the students are also aware of the potential encounter of an online scam that threatens them with arrest or penalties from authorities. However, they should be mindful of how to recognize impersonation schemes. The researchers propose that the students must check the identity of the impersonator or notify its management with the assistance of elders before disclosing any personal or financial information to make them less vulnerable to authority cues

Furthermore, the results conclude that the students are aware of the fraudulent strategies utilized in online shopping scams to gain profit from those who become victims. Nonetheless, students should be wary of these suspicious activities by checking if it is a legitimate online store or website and utilizing privacy features to limit who can access their information before shopping.

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Mental Health Literacy of Senior High School Students in Olivarez College Tagaytay

**Alcedo, Tyrone Emiel
Garcia, Lhoyd Ahndrei
Joya, Karyle
Licup, Karylle Nicole**

**Malubay, Jasper John
Mendez, Shaquira
Peñalba, Marl Gideon
Pereña, Chelzea Jermaine**

**Punzalan, Kylie
Ragot, Rainiel
Viva, Malex
Vizcarra, April**

I. Abstract

Mental Health Literacy is knowledge, attitudes, and behaviors pertaining to mental health that facilitate one's ability to prevent, recognize, and manage mental health-related issues. However, Mental Health Literacy is often ignored because it is difficult to recognize it, studies have highlighted low levels of mental health literacy among students. Thus, this study aimed to determine the Mental Health Literacy of Senior High School Students at Olivarez College Tagaytay. The researchers utilized a descriptive quantitative research design using the universal sampling technique to collect 2,080 respondents in all Grade 11 and Grade 12 students in OCT. The researchers used a self-made questionnaire to gather the needed data and utilized different statistical treatments such as frequency and percentage and the weighted mean to analyze the gathered data. This study revealed that the respondents were aware and literate about mental health. In order to prevent mental health issues, respondents are highly aware and highly literate to improve their mental health by doing something enjoyable. Subsequently, respondents are aware and literate to recognize sleeping six (6) - eight (8) hours a day can help them towards better mental health, and that watching funny videos can manage their feeling of loneliness. The researchers highly recommend a seminar for all students in OCT to discuss the effective management of mental health and give awareness to students that there are many interventions and activities that are implemented in schools and other facilities just to prioritize mental health. Especially to these students and also to give some leaflets that include some information about Mental Health.

Keywords: Mental Health Literacy, prevention, recognition, management

II. Introduction

Health can be viewed as the presence or absence of disease or medically measured risk factors in an individual. However, more broadly, health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity (Felman, 2020). Health reflects the complex interactions of a person's genetics, lifestyle, and environment.

A vital part of overall health is mental health, it is more than just being free from illness or disability. The capacity to think, engage with others, enjoy life, and make a living is a major element of well-being. According to Jorm (2018), mental health is a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively, and is able to make a contribution to his or her community (World Health Organization, 2014). Additionally, MHL is defined as knowledge, attitudes, and behaviors pertaining to mental health that facilitate one's ability to prevent, recognize, and manage mental health related issues. According to Nguyen Thai, (2018), this definition emphasizes the role of recognition of mental health problems and help-seeking for management and prevention by young people and people close to them. Because mental health problems often arise at a young age, such studies are needed for potential interventions to improve mental health for young people.

The purpose of this study is to know the level of awareness of the students in the categories of prevention, recognition, and management in order to handle their mental health in a positive and effective way. Prevention, recognition, and management are all essential aspects of maintaining good mental health. Prevention involves adopting healthy lifestyle habits, building strong relationships, managing stress, and avoiding substance abuse. Early recognition of mental health problems can lead to early intervention, which can prevent symptoms from becoming more severe. According to (WEDSSR, 2021), Studies have highlighted low levels of mental health literacy among students. Recognizing symptoms such as changes in sleep or appetite, loss of interest in activities, or feelings of hopelessness and seeking professional help early can lead to better outcomes.

Mental health is a vital part of living a balanced life. It affects your thoughts, behavior, and emotions and allows you to adapt to changes in your life and cope with adversity. However, Mental Health is often ignored because it is difficult to recognize it (UNC Health Caldwell, 2022). Mental health is essential for the overall well-being of individuals, societies, and countries. Despite being

imperative for human existence, in many countries, unlike the importance given to physical health, mental health has been relegated to Tesfaye, (2021), lack of MHL contributes to low recognition of problems and is frequently a reason for the delay in seeking help and maybe one more prevalent in lower socioeconomic groups (Patel, 2018). However, not all students have enough awareness about MHL to identify these emotions or problems and thus may never seek support through counseling or treatment (Metz, 2023).

The purpose of this quantitative study is to determine the level of student's Mental Health Literacy of Senior High School students at Olivarez College Tagaytay

The researchers sought to answer the following questions:

1. What is the demographic profile of the respondents in terms of:

1.1 Age

1.2 Sex

1.3 Strand

2. What is the Mental Health Literacy of Senior High School Students in Olivarez College Tagaytay in terms of;

2.1 Prevention

2.2 Recognition

2.3 Management

This study was limited to SHS Grade 11 and Grade 12 students at OCT. This study focuses on MHL of OCT students in terms of prevention, recognition, and management MHL related issues.

III. Methodology

The study focused on knowing the MHL of SHS Students in OCT, the researchers used a Quantitative Descriptive Research Design. According to McCombes, (2019), it seeks to precisely and methodically describe a population, situation, or phenomenon. Furthermore, this strategy seeks to collect quantifiable data for statistical analysis of a population, a method that attempts to collect quantifiable information for statistical analysis of the population sample of students on academic stressors.

The researchers used the Universal Sampling Technique to have the total number of respondents. According to Avron (2019), Universal Sampling can help to achieve optimum complexity for any class of signal. It also involves the collection of samples in which members of the population do not have the same chance of being included in the sample and the probability of including one of them is unknown. All Senior High School Students are the respondents to this study, in total, we have 2,080 respondents. Grade 11 and 12 from ABM- 413 respondents, TVL- 296 respondents, HUMSS-641 respondents. The researcher used a self-made questionnaire. The researchers gathered 16 students for a reliability test to ensure that the survey is reliable.

For the data collection, the researchers formally requested permission from the school principal to conduct a survey of several target respondents. After getting permission, the researchers individually distributed the survey questionnaires and tallied the data. Finally, determining the percentage, weighted mean, and frequency enabled researchers to examine the problem.

Lastly, the Statistical Treatment used by the researchers to determine the demographic profile of the respondents is frequency and percentage. The researchers still used the frequency and percentage to determine the MHL of the respondents. While a weighted average was used to assess the respondents' responses, percentage and frequency were utilized to assess the demographic profile of the respondents. The researchers calculated the scale's score and mean ranges with the intention of arriving at a definitional interpretation of the result

Score Ranges**Quantitative Description**

3.26 - 4.00

Highly Aware

2.51 - 3.25

Aware

1.76 - 2.50

Slightly Aware

1.00 – 1.75

Not Aware

Score Ranges**Quantitative Description**

3.26 - 4.00

Highly Literate

2.51 - 3.25

Literate

1.76 - 2.50

Slightly Literate

1.00 – 1.75

Not Literate

IV. Results**Problem 1. What is the demographic profile of the respondents in terms of:****1.1 Age****1.2 Sex****1.3 Strand***Table 1.1 Age of the respondents*

Age	Frequency (f)	Percentage (%)
16	460	22.1
17	867	41.7
18	624	30
19 above	129	6.2
TOTAL	2, 080	100%

Table 1 shows the frequency and percentage of the age of the respondents. First, the respondents at the age of 17 years old were 867 or 41.7%. Second, the respondents at the age of 18 were 627 or 30%. Then, the respondents at the age of 16 were 460 or 22.1%. And lastly, the respondents above 18 were 129 or 6.2%. The overall all result shows that the researchers successfully attained the total number of 2080 students. The result depicts that most of the respondents were seventeen (17) years old with a frequency of 867 which is equivalent to 41.7 of the respondents. According to Philippine Basic Education (2020), Senior high school students in the Philippines are between 17 and 18 years of age and because of DEPED K to 12.

Table 1.2 Sex of the Respondents

Grade Level	Frequency (f)	Percentage (%)
Female	1, 135	54.6
Male	945	44.9
TOTAL	2, 080	100%

Table 1.2 shows the frequency and percentage of the gender of the respondents where the result illustrates that the majority of SHS were female with a frequency of 1,135 which is equivalent to 54.6% of respondents while 945 or 44.9% of the respondents were male. Moreover, in the case of the study, the majority of Senior High School Students of Olivarez College Tagaytay were female. RRL

Table 1.3 Section of the respondents

Section	Frequency (f)	Percentage (%)
STEM	730	35.2
ABM	413	19.8
TVL	296	14.4
HUMSS	641	30.9
TOTAL	2, 080	100%

Table 1.3 shows the frequency and percentage of each strand of Grade 11 and 12 respondents wherein STEM has 730 respondents or 35.2%, ABM has 413 respondents or 19.8%, and TVL has 296 respondents, or 14.4%. And Lastly, HUMSS has 641 respondents, or 30.9% with a total of 2080 respondents. The result shows that STEM has the highest number of respondents who participated in the study. According to Ejournal 2022, the majority of students prefer to take the STEM strand. Overall, the researchers included 2,080 respondents from Grade 11 and Grade 12 Students in Olivarez College Tagaytay.

Problem 2. What is the Mental Health Literacy of Senior High School Students in Olivarez College Tagaytay in terms of;

2.1 Prevention

2.2 Recognition

2.3 Management

Table 2.1 Mental Health Literacy of the Respondents on Prevention

Indicators	Weighted Mean	Verbal Interpretations
Prevention	2.89	Aware
1. I can seek professional help whenever I experience severe emotions (such as sadness, happiness, and anger).		
2. I change my lifestyle as soon as I notice that it is not helping my mental health.	3.04	Aware
3. I can do something enjoyable that helps to improve my mental health.	3.31	Highly Aware
4. I change my unhealthy lifestyle to a healthy lifestyle to maintain good mental health.	3.07	Aware
5. I educate myself to have sufficient information to manage my health.	3.18	Aware
Overall Weighted Mean	3.10	Aware

Table 2.1 shows the individual items under the category of prevention. Among the five (5) specific indicators of this aspect, “*I can do something enjoyable that helps to improve my mental*

health” attained the highest mean of 3.31 (Highly Aware) while “*I can seek professional help whenever I experience severe emotions*” attained the lowest mean of 2.89 (Aware). It presents that senior high school students do something enjoyable to improve their mental health rather than seeking professional help. According to Nietzel (2021), The primary reason respondents offered for not seeking professional help was a preference for self-help where people said they preferred to manage their challenges on their own or did not think they needed any mental health treatment.

Table 2.2 Mental Health Literacy of the Respondents on Recognition

Indicators	Weighted Mean	Verbal Interpretations
Recognition	3.27	Highly Aware
1. Severe sadness will lead to mental health issues.		
2. Social support can reduce the risk of developing poor mental health.	3.18	Aware
3. If having problems, share them with somebody.	3.01	Aware
4. Physical activities such as exercising can help to improve mental health.	3.26	Aware
5. Sleeping 6-8 hours a day can help towards better mental health.	3.35	Highly Aware
Overall Weighted Mean	3.22	Aware

Table 2.2 shows the individual items under the mental category. Among the four (4) specific indicators of this aspect, "*sleeping 6-8 hours a day can help towards better mental health*" got the highest weighted mean of 3.35 (Highly Aware) while “*If having problems, sharing them with somebody*” obtained the lowest weighted mean of 3.01 (Aware), In conclusion, senior high school students benefit for greater mental health from their 6 to 8 hours of sleep per day. According to Tea Lallukka PhD (2018), poor sleep quality has robust associations with worse functioning regardless of total duration in the general population. There appears to be a substantial number of functional short sleepers with good quality sleep.

Table 2.3 Mental Health Literacy of the Respondents on Management

Indicators	Weighted Mean	Verbal Interpretations
Management	3.09	Aware
1. If I am feeling lonely, I watch funny videos.		
2. If I have a problem I should share it with somebody to help me to resolve such problems.	2.86	Aware
3. If I am feeling worried, I make a list of all possible solutions I can think of.	2.74	Aware
4. If I am feeling hopeless, I know someone whom I can run to.	3.01	Aware
5. If I am overthinking, I know strategies to help me to be resilient when faced with difficult situations.	3.01	Aware
Overall Weighted Mean	2.94	Aware

Table 2.3 shows the individual items under the category of management. Among the five (5) specific indicators of this aspect, *"If I am feeling lonely, I watch funny videos"* attained the highest mean of 3.09 (Aware) while *"If I have a problem I should share it with somebody to help me to resolve such problems"* obtained the lowest mean of 2.74 (Aware). In conclusion, senior high school students watch amusing movies on their phones rather than sharing them with others when they're feeling lonely. According to Caouette & Guyer, (2019), the reason why a person doesn't want to share his/her problems to others is because of common fears which are social humiliation and embarrassment that occur, particularly, in interaction situations.

Table 2.4 Overall Mental Health Literacy of Senior High School Students in Olivarez College Tagaytay

Categories	Weighted Mean	Verbal Interpretations
Prevention	3.10	Aware
Recognition	3.22	Aware
Management	2.94	Aware
Overall Weighted Mean	3.08	Aware

Table 2.4 shows the indicators of Mental Health Literacy. Among the 3 indicators "Recognition" attained the highest mean that is verbally interpreted as "Aware". In conclusion, students are able to recognize Mental Health. Mental health knowledge is an important part of mental health literacy. According Burns (2020), have concluded from their research that adolescents with good mental health knowledge will help themselves in maintaining physical and mental health,

V. Discussion

Overall, the study revealed that the respondents are aware of the MHL in terms of Prevention, Recognition and Management. There were 2,080 responses in total and most of the respondents were female, since females reported considerably higher total literacy and indicating more moderate MHL than male counterparts. It shows that female students make up the majority at OCT. Furthermore, the researchers concluded that most female students at OCT experience MHL in terms of Prevention, Recognition and Management. However, among all the three (3) categories included in every category Management attained the highest with a weighted mean which is verbally interpreted as Aware, the first indicator " *If I am feeling lonely, I watch funny videos.*"

To simplify, this research has only focused on the Mental Health Literacy of Senior High Students (SHS) in Olivarez College Tagaytay. The researchers conducted a survey on all SHS

students from SHS in Olivarez College Tagaytay. Unfortunately, there are 16 respondents who are not able to answer the survey.

With all these mentioned, the researchers highly recommend a seminar for all students in OCT to discuss the effective management of mental health and give awareness to students that there are many interventions and activities that are implemented in schools and other facilities just to prioritize mental health especially to these students and also to give some leaflets that include some information about Mental Health. They are being engaged in tasks and activities that can educate and help them neutralize their situations. Awareness and prevention should be continuous and mental health literacy should not end on school facilities rather it should be prioritized also in the community. Prevention, recognition, and management of mental health is critical in maintaining and improving the overall well-being of the students. However, there are times that these are being left behind especially at times when the students are very busy in school physically and mentally.

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Yeast Mixture as a Fire Extinguisher Ball

Balanag, Kian
Bascuguin, Raphael
Baylon, Ellaine Grace
Cabullo, Yesha Gwen
Dela Rea, John Vincent

Dimaano, Christina
Guirnaldo, Joey
Luna, Nicole
Marquez, Meziah Altea

Monroyo, Alliah Bianca
Panganiban, Eunice Ann
Robles, Jm
Turreda, Leann Jersey
Villena, Mark Joseph

I. Abstract

Fire extinguishers were already existing in every country, it was expensive for most households and usually accessible only to workplaces or establishments. Additionally, fire incidents occur frequently worldwide, resulting in loss of life, destruction of infrastructure, and harm to both humans and animals. The objective of this study was to investigate the effectiveness of a yeast mixture as a portable, cost-efficient fire extinguisher ball. The researchers used a quantitative quasi-experimental research design and employed a purposive sampling technique. The researchers created a survey questionnaire then conducted a product evaluation. The statistical treatment used was the weighted mean to analyze the data. Furthermore, the results showed that the product was effective and acceptable, especially when it came to its size, which could be easily carried and stored in small spaces. However, the odor produced during the chemical reaction, although not pleasing, was tolerable. In addition, the container of yeast mixture was made up of styrofoam that melted slowly but was considered flammable. Knowing this, the study recommended finding a less flammable or even a non-flammable container, as well as further developing the design since the product contained balloons and pins inside.

Keywords: fire incidents, fire extinguisher ball, yeast mixture, dry yeast, hydrogen peroxide, dish soap, cost-efficiency, portable

II. Introduction

Fire incidents were commonly happening all around the world. It damages lives, destroys infrastructures, and becomes a cause of human beings' death and even animals. Many incidents happened in homes, workplaces, and even public places. Typically, each year, from 2013 to 2018, there were 15,733 fire incidents in the Philippines, resulting in 855 fire related injuries and 253 fire-related deaths as stated by Bicenio & Lagasca (2020). This data caused the global recognition of fire incidents as a recurring tragedy, and victims were frequently left destitute. The government, especially the scientific researchers, provided plans and equipment allotted for putting out a fire. Hence, many types of mixtures that can extinguish the fire were developed. These include the standard variable nozzle, water mist, powder, and foam. As the number of cases increases, Aamodt et al., (2020) stated that foam application could put out a fire by suppressing the three components of fire: heat, oxidizer, and fuel. Foam causes the vapors to repress, smother, and cool the fire causing it to extinguish and avoid reignition temporarily. Considering that most incidents happen in households that lack fire prevention equipment and practices, an alternative fire extinguisher would be a great solution. The researchers used yeast that can produce carbon dioxide, hydrogen peroxide that can extinguish a fire when mixed with water, and dishwashing liquid that contains sulphates which acted as the foaming agent. This product used yeast (*saccharomyces cerevisiae*) as an incombustible material, together with the *agua oxigenada* (hydrogen peroxide) as the stimulator, water and dishwashing liquid (sodium carbonate) as the primary producer of the foam. This yeast mixture eliminates fire by creating a chemical reaction that causes foam formation by mixing all the ingredients and throwing them into the burned area.

In the previous studies, Aizawa et al., (2022) created an alternative fire extinguisher using baking soda, vinegar, soap water, and salt placed inside a plastic bottle. However, their study was limited to the longevity of the mixture since they need help finding an instrument to measure it. On the other hand, the researchers used yeast with hydrogen peroxide and dishwashing liquid instead of vinegar. In addition, Elahi et al., (2019) created a fire extinguisher ball consisting of ABC dry powder — a powder that can extinguish classes A, B, and C fires consisting of monoammonium phosphate, ammo, fuse, adhesive, and expanded polystyrene as the container. Their fire extinguisher ball explodes and consists of ammonium sulphate, which is toxic when inhaled. In contrast, the researchers did not use harmful chemicals that can irritate skin and did not

use any explosive substances since it was foam-based. In addition, the researchers also used styrofoam as the container since the yeast mixture is liquid. The preferred material for styrofoam is Expanded Polystyrene (EPS), which is both environmentally safe and less harmful to humans, particularly when burned. According to the European Manufacturers of Expanded Polystyrene or EUMEPS (2016), the smoke emitted by EPS was significantly less toxic than that of other commonly used materials. The study tested the smoke fumes from various sources, including wood, wool, silk, cotton, fire retardant treated cotton, and three types of EPS, and found that EPS had the lowest toxicity levels among all of them, including standard EPS and EPS of SE quality. Apart from this, the yeast mixture was a foam based fire extinguisher placed inside a sphere of styrofoam made of accessible materials.

However, in the 20th century, the Philippines had a higher risk of fire occurrences due to its geographic location, long-term climate, weather changes, and hotter seasons. As stated by De Leon & Miranda (2022), incidents happen not just because of the reasons mentioned earlier but also due to the combustible materials often used in residential and industrial structures. Although fire extinguishers already exist in the country, it was expensive for most households and usually accessible only to workplaces or establishments. Also, according to Asyraf et al., (2020), the current fire extinguisher poses significant challenges to many users due to its weight and design. Wherein the existing fire extinguishers are prone to rust and clogging, the solution that it has can irritate skin and eyes. To solve these issues, some researchers have created an alternative fire extinguisher using plastic bottles with vinegar, baking soda, dish soap, water, and salt. Nevertheless, the employment of the mentioned product was only suitable for small fires. However, in this study, the researcher produced an alternative fire extinguisher ball using the yeast mixture ideal for household use in terms of accessibility, portability, and affordability.

Consequently, according to Elahi et al., (2019), industries are currently encountering numerous fire incidents. To address this issue, they developed a fire ball extinguisher, designed to quickly and efficiently extinguish fires. Despite this, it should be noted that the product created by the aforementioned authors includes ammunition and a fuse, which may increase the potential risk and necessitate proper training before use. Furthermore, they stated that the product was not suitable for household use and twice as heavy as traditional fire extinguishers. Therefore, the purpose of this quantitative research was to know the level of effectiveness of yeast mixture in suppressing fires. Additionally, this study aimed to examine the benefits of the said mixture in

terms of accessibility, portability, and cost efficiency in smothering fires. The result of this study could be of great assistance, particularly to those residing in suburban areas where access to traditional fire extinguishers was limited.

This study aims to answer the following questions;

1. How much yeast, hydrogen peroxide, water, and dish soap are needed in order to extinguish fire considering its perimeter and longevity?
2. What are the characteristics that can be observe in the fire extinguisher ball in terms of:
 - 2.1 size
 - 2.2 odor
 - 2.3 portability
3. How effective is the mixture of yeast, hydrogen peroxide, water, and dish soap as an alternative fire extinguisher?

This research concentrated on the effectiveness of yeast mixture as a substitute fire extinguisher. Additionally, the researchers attempted to quench Class A fires, also referred to as regular fires, Class B fires, which use liquids and gases as fuel, and Class D fires. Since these kinds of fires frequently happen in homes without fire extinguishers, that might be a problem if a crisis occurs.

The effectiveness of using yeast mixture as a fire extinguisher ball was tested in this study. It was enclosed in a sphere of styrofoam, which melts quickly when exposed to fire. Because large-scale fire and professional firefighter guidance are required, this study did not cover the ball's most comprehensive range.

By identifying topics and other areas that require additional contributions, this study conducted and provided guidelines for exploring and experimenting with ideas in this field. This study benefits **establishments and homeowners** because the fire extinguisher ball was suitable for home use, and **fire prevention officers** because it reduces the damage caused by a fire incident. Upon creating this product, they have the advantage of having a portable, accessible, and affordable extinguisher ball. Moreover, the **students and teachers** already knew the components of the mixture that can easily make the fire extinguisher mixture without having to make the whole ball knowing that the mixture can extinguish the fire by itself and lastly, **future researchers** because they can expand and improve on the findings of this study.

This paper, supported by Gehandler's Systems Theory (2017), suggests that safety is the result of interactions between the components of a system, and it can be controlled by setting limits, known as safety constraints, on these components. For example, the amount of violence in the human body can withstand a safety constraint. By viewing safety in this manner, The researchers can improve the design of systems that involve humans, technology, and structures, resulting in innovations and advancements in fire safety. The theory has guided the researchers to develop a fire extinguisher ball that would meet the safety requirements of users while delivering improved safety, effectiveness, and efficiency. Additionally, the theory provides an understanding of what and how the components work and integrates into the environment. Finally, the idea mentioned helped the researchers to take a holistic view of the production of fire extinguisher balls rather than focusing solely on its components.

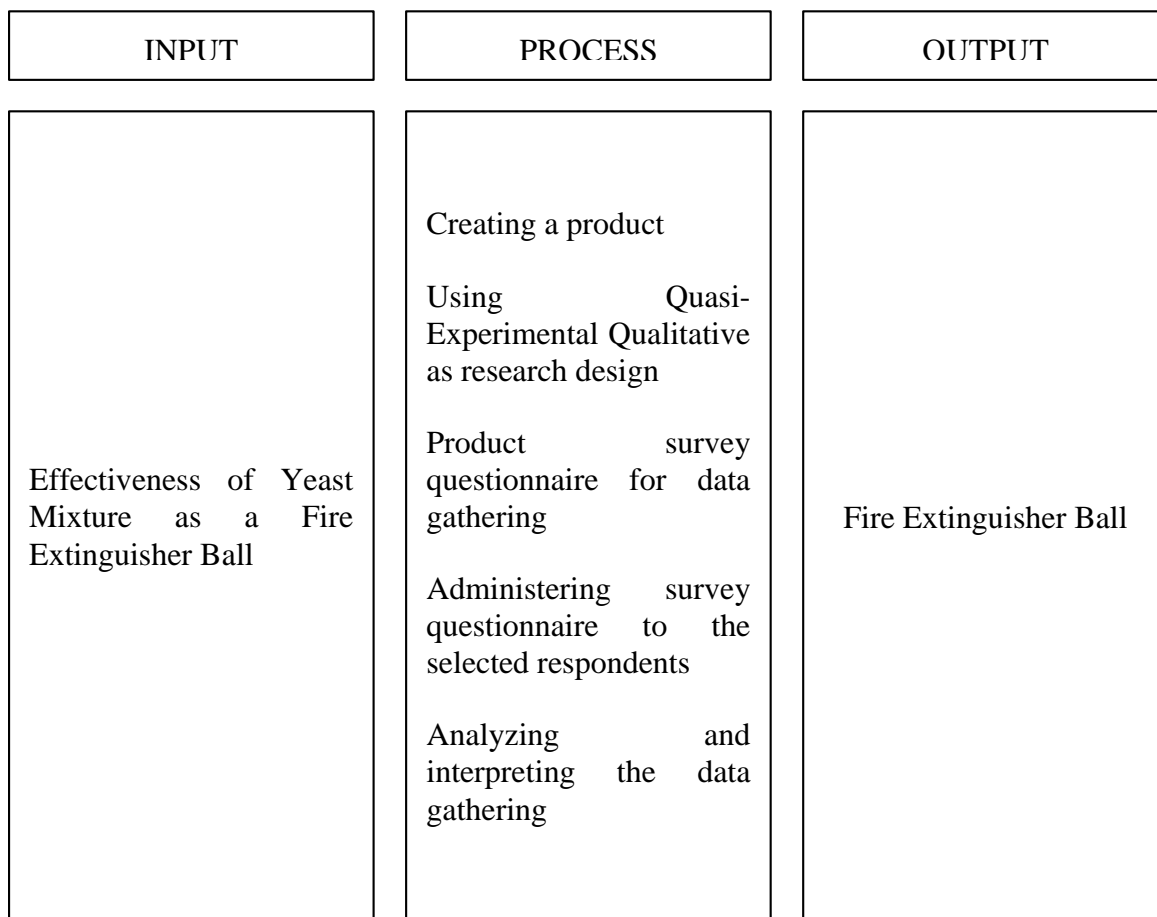


Figure 1. Conceptual Paradigm

The researchers employed the Input, Process, and Output Model (IPO Model) presented in Figure 1.1 as the conceptual research model. This showed the effectiveness of yeast mixture as a fire extinguisher as the input of the research and demonstrated the starting process of making the fire extinguisher ball as the product until the analysis and interpretation of the data collected. In addition, this model represents the output of this research — the fire extinguisher ball.

III. Methodology

The researchers utilized a quantitative quasi-experimental for conducting this research. As stated by Chiang (2015), most quasi-experiments are carried out in real-world situations where random assignment is challenging or impossible. These are commonly performed to determine how well a course of treatment is working. In this case, the researcher used quantitative quasi-experimental to determine the effectiveness of using yeast mixture as a fire extinguisher ball. The researchers started by finding the problems encountered primarily in the Philippines. Fire incidents are one of these problems that everyone cannot prevent. The researchers looked for studies and articles that indicate different ways of extinguishing a fire.

On the other hand, the researchers conducted this study using a purposive sampling technique. This strategy was non-random and did not call for a set number of participants or an underlying theory. The researcher decided what knowledge was vital to acquire before seeking out persons who could and were willing to supply it owing to their skill or experience (Etikan, 2016). Thus, using the purposive sampling technique, the researchers made criteria that the respondents should meet: (1) a professional fire protection officer, (2) experts in science-related fields and able to reduce possible dangers while testing the product, (4) homeowners that are likely to use the alternative fire extinguisher.

The researchers picked the 8 officers of the Bureau of Fire Protection Amadeo, 4 Science teachers from Olivarez College Tagaytay, and 18 homeowners to help them examine the use of yeast mixture as an alternative fire extinguisher. The officers of the said institution were the respondents of the study since they know the classification and things to consider to determine the effectiveness of using yeast mixture as an alternative fire extinguisher ball. In addition, they can also add recommendations and suggestions to improve the output of this study. In line with this, the researchers also chose the science teachers and homeowners for the reason that they

could help the researchers to determine the effectiveness of yeast mixture; as well as the acceptability of the characteristics of the fire extinguisher ball. To clarify, the researchers had a total number of 30 respondents to participate in the study.

By the guide of these studies, the researchers decided to use yeast, hydrogen peroxide, water, and dishwashing liquid as an alternative mixture for a fire extinguisher. First, the researchers prepared 150 grams of yeast, 200 mL of hydrogen peroxide, 200 mL of dishwashing liquid, sphere styrofoam, balloons, pins, string, aluminum foil, tape, and sticks. Second, they made the mixture container by carving the styrofoam's inside part and cutting the ball's upper part — detaching the $\frac{1}{4}$ part of it. Third, they put the pebbles on the bottom of the ball and covered it with aluminum foil. After that, they attached the pins at the top of the aluminum foil with double-sided tape. They perforated the side of the ball 2 inches apart from each other horizontally, 3 inches vertically, and had a diameter of 1 centimeter. They covered it with transparent tape, they used transparent tape which was less sticky so that the foam mixture could get away easily. Moving on to the fourth step, they poured the 150 grams of dry yeast inside and put the hydrogen peroxide and the dishwashing liquid into two different balloons to separate the two fluids. Fifth, they tied the balloons together using yarn and made a tiny hole at the top of the minor part of the ball. Sixth, they inserted the string into the hole glue and tied it with the pin attached above the smaller piece of styrofoam. Lastly, they glued the balloon together using glue sticks and finished creating the fire extinguisher ball.

This 7-inch fire extinguisher ball can extinguish Class A, B, and D fires within a 1.1 m² perimeter. Assuming an establishment of 100m² requires 90 fire extinguisher balls to cover the area, only 4-5 products are typically needed for day-to-day scenarios since the product was designed for small fires. Based on calculations, the estimated shelf life of this product was 8-10 months at the maximum level, but with maintenance, it can last up to more than a year. The type of maintenance recommended for this product was preventive, which includes replacing worn-out parts such as the balloon that shrinks due to environmental factors, particularly temperature, and the components inside the balloon, which include dishwashing liquid, water, and hydrogen

peroxide. These steps were illustrated below (Figure 2.2) for a clearer understanding of the procedure.

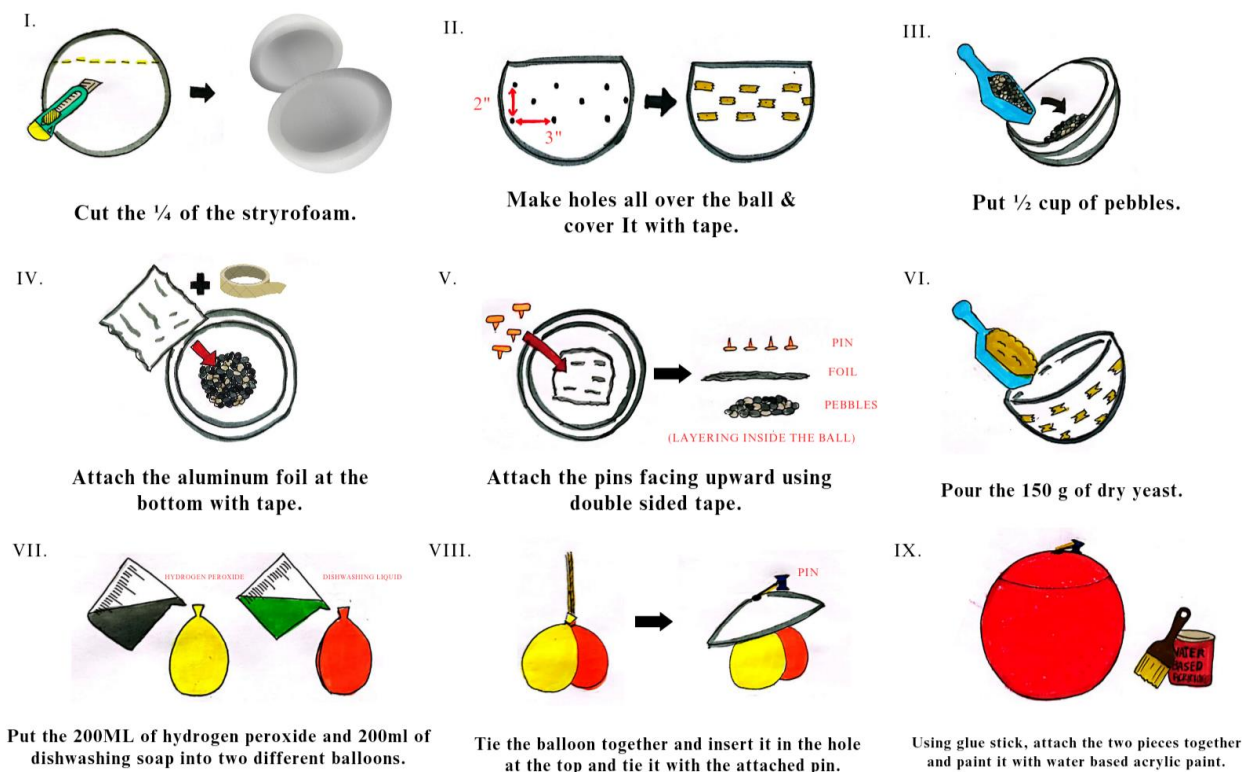


Figure 2. Experiment Procedure

Before conducting a survey to collect data, the researchers sought permission from the principal. After requesting permission, the approval was sent to the selected participants who met the study's criteria, which are Amadeo officers from the Bureau of Fire Protection. The researchers collected the data for the research study using a survey questionnaire. This method aids in determining the effectiveness of the yeast mixture as a fire extinguisher ball. Furthermore, the survey included an option for respondents to respond as well as a closed-end questionnaire that assisted the researchers in evaluating their views and insights.

The statistical treatment that is utilized by the researchers is the weighted mean. Wherein, the mean was used to establish the respondents' verbal interpretation of each sentence and the mean score range was employed to arrive at a definitive result:

Scale Ranges	Qualitative Description
3.26 – 4.00	Highly Acceptable
2.51 - 3.25	Acceptable
1.76 - 2.50	Slightly Acceptable
1.00 - 1.75	Unacceptable

Scale Ranges	Qualitative Description
3.26 – 4.00	Highly Effective
2.51 - 3.25	Effective
1.76 - 2.50	Slightly Effective
1.00 - 1.75	Not Effective

IV. Results

Problem 1. How much yeast, hydrogen peroxide, water, and dish soap are needed in order to extinguish fire considering its perimeter and longevity?

Table 1. Measurement of Ingredients, Perimeter, Longevity

Size of the Styrofoam Ball	Measurement of Ingredients	Perimeter	Longevity
6 inches	100 grams of dry yeast 150 milliliters of hydrogen peroxide 150 milliliters of dish soap with water	0.8 m ²	10 months
7 inches	150 grams of dry yeast 200 milliliters of hydrogen peroxide 200 milliliters of dish soap with water	1.1 m ²	10 months
8 inches	200 grams of dry yeast 250 milliliters of hydrogen peroxide 250 milliliters of dish soap with water	1.5 m ²	10 months

Table 1 indicated that for every 150 grams of dry yeast, 200 millilitres of hydrogen peroxide and 200 millilitres combination of water and dishwashing liquid was needed to extinguish

a fire. It also showed the different sizes and its respective perimeter, as well as its longevity. In this study, the ball with 7 inches is the most appropriate size to use considering its portability. Whereas, the product must be stored to a room temperature not exceeding 22 degrees Celsius or 72 degrees Fahrenheit to prolong the life of the product and to avoid the sudden explosion of it, since an increase in the temperature might trigger the busting of the balloon. This mixture alone can put out the fire by simply mixing it even without having to create the ball itself. Moreover, the rapid reaction of the mixture only took 5 to 10 seconds, due to that the foam of the mixture was also released within 5 to 10 seconds.

Along with this, the estimated storage life of the product was ranging from 8 to 10 months. Considering that the hydrogen peroxide would last for about 2 to 3 years as well as the dry yeast, the dishwashing liquid was expected to last for about 1 to 2 years while the balloons with water were designed to stay inflated for 8 to 10 months at the maximum level.

Problem 2. What are the characteristics that can be observed in the fire extinguisher ball?

2.1 size

2.2 odor

2.3 portability

Table 2.1 Size of the Fire Extinguisher Ball

Indicators	Weighted Mean	Verbal Interpretation
1. The size of the product is appropriate in a home setting.	3.90	HighlyAcceptable
2. The size of the product is convenient for storage and deployment in emergency situations.	3.63	Highly Acceptable
3. The size of the product is important when considering the amount of mixture that will be used.	3.83	Highly Acceptable
Average Weighted Mean	3.79	Highly Acceptable

Table 2.1 showed the acceptability of the size of Fire Extinguisher Ball based on the answer of respondents. The statement with the highest weighted mean computed of 3.9 in the table states that the size of the product is appropriate in a home setting which is verbally interpreted as highly acceptable. The lowest weighted mean computed states that the size of the product is convenient for storage and deployment in emergency situations with 3.63 and was interpreted as highly acceptable. The overall weighted mean of the size of the fire extinguisher ball was 3.79 which was verbally interpreted as highly acceptable. Therefore, the overall rating of the product regarding its size is highly acceptable. To support this statement, Kauffman Co. Fire and Life Safety (2022) stated that the size of a fire extinguisher is always important to consider to indicate the amount of extinguishing agent it can hold. Hence, having a fire extinguisher ball with the appropriate size is a huge advantage for the users.

Table 2.2 Odor of the Fire Extinguisher Ball

Indicator	Weighted Mean	Verbal Interpretation
1. The smell of the yeast, hydrogen peroxide, and dish soap as a fire extinguisher ball is tolerable.	2.83	Acceptable
Weighted Mean	2.83	Acceptable

Table 2.2 displays the acceptability of the odor of the fire extinguisher ball. The statement with the weighted mean computed of 2.83 in the table states that the odor of the product is appropriate in a home environment which is verbally interpreted as acceptable. In this case, knowing that the odor of the fire extinguisher ball was acceptable, it would not have possibly caused any serious illnesses. According to Dominguez (2018), only at very high concentrations does CO₂ inhalation become toxic. Most of the time, the area has sufficient air to prevent poisoning. However, if a CO₂ extinguisher is used in a constrained space with limited ventilation, poisoning may result. The effects of breathing in concentrated CO₂ are similar to those of breathing in insufficient oxygen, including difficulty breathing, lightheadedness, and loss of consciousness. Therefore, knowing that the product's odor is acceptable, it only means that the components of the fire extinguisher ball are not harmful.

Table 2.3 Portability of the Fire Extinguisher Ball

Indicators	Weighted Mean	Verbal Interpretation
1. The product can easily carry from one place to another.	3.83	Highly Acceptable
2. The product can easily activate in case of a fire emergency.	3.73	Highly Acceptable
3. The product can easily use by people with limited mobility or physical disabilities	3.8	Acceptable
4. The product can easily be disposed of after use.	3.6	Highly Acceptable
5. The product doesn't need any professional training or practice in order to be used properly.	3.8	Highly Acceptable
Overall Weighted Mean	3.75	Highly Acceptable

Table 2.3 revealed the acceptability of the portability of the fire extinguisher ball. The statement with the highest weighted mean garnered — 3.83, stated that the product was easily carried from one place to another. Meanwhile, the statement with the lowest weighted mean garnered 3.6, it stated that the product was easily disposed of after use. Overall, the total mean of the gathered data is 3.32 which is under the highly acceptable. In conclusion, this may prove that the created fire extinguisher ball is portable and portability of such safety precautions is crucial. To support this statement, Azmi et.al (2019) stated that a portable fire extinguisher is essential because most fires start small. A portable fire extinguisher can easily prevent a small fire from spreading. Therefore, the portability of safety precautions is vital in times of accidental situations.

Problem 3. How effective is the mixture of yeast, hydrogen peroxide, water, and dish soap as an alternative fire extinguisher?

Table 3. Effectiveness of Yeast Mixture

Indicators	Weighted Mean	Verbal Interpretation
1. The product can put out fire in under a minute.	3.63	Highly Effective
2. The product can produce a sustainable amount of foam to eliminate fire.	3.53	Effective
3. It can eliminate Class A type of fire (Ordinary Combustible) such as Wood, Paper, Cloth, etc.	3.6	Highly Effective
4. It can eliminate Class B type of fire (Flammable Liquids) such as Grease, Oil, Paint and Solvents.	3.56	Effective
5. It can eliminate D type of fire (Combustible Metal) such as Magnesium, Aluminum, etc.	3.13	Effective
Overall Weighted Mean	3.49	Highly Effective

Table 3 exhibited the effectiveness of yeast mixture based on the answers of the respondents. The statement indicating the highest weighted mean computed in the table states that the product can put out fire in under a minute, accumulating a 3.63 weighted mean which was verbally interpreted as highly effective. The lowest computed mean which states that it can eliminate Class D type of fire with a weighted mean of 3.13 and was interpreted as effective. The overall weighted mean computed for the effectiveness of yeast mixture as a fire extinguisher ball is 3.49 which was verbally interpreted as highly effective. To support this, a research by the Fire Extinguishing Trades Association (FETA) and Independent Fire Engineering and Distributors Association (IFEDA) in 2021, states that the performance of portable extinguishers in the 80% of 2100 fire instances in the U.K., a fire extinguisher ball succeeded on putting out the fire. Moreover, in the event of a fire disaster, fire ball extinguishers are effective for safeguarding buildings and infrastructures.

V. Discussion

Overall, to determine the effectiveness of yeast mixture as an alternative fire extinguisher ball. With certain exceptions, the data gathered revealed that the respondents possess a positive outlook to the product of the study. The results showed the fire extinguisher ball garnered a total weighted mean of 3.49 in terms of effectiveness and 3.14 in terms of acceptability of characteristics. On the whole, the researchers achieved a highly effective and highly acceptable result. Hence, the fire extinguisher ball made up of dry yeast, hydrogen peroxide, and dishwashing liquid is proven to effectively extinguish the fire. To support this, according to Ratzer (2018) this type of foaming fire extinguisher allows foam to float on the surface of a burning liquid, preventing dangerous vapors from escaping. It also provides a broad area for radiant heat absorption, which helps cool the surface and surrounding edges, lowering vapor pressure. In addition, knowing that the fire extinguisher ball contains a foam-based mixture, it can possibly help the fire protection officers, teachers, household owners, and students.

To clarify, the findings of this study are restricted to large fires or those with a perimeter of higher than 1.1 m², since the fire extinguisher ball has a diameter of 7 inches and the amount of yeast mixture that can be put inside is limited. Additionally, the fire extinguisher ball is only effective for certain classes of fire, excluding Class C and K, as these classes of fire can be difficult to extinguish and may even worsen the situation. It should be noted that this study only examined the effectiveness of a yeast mixture and observed characteristics such as size, perimeter, odor, portability, and longevity. Furthermore, the fire extinguisher ball must be shaken at least four times to achieve a sufficient amount of foam from the chemical reaction of the yeast mixture. The dry yeast in the mixture requires more shaking to speed up the reaction. Lastly, the container used to hold the yeast mixture is made of EPS styrofoam, which produces fewer fumes and melts slowly but is still flammable.

Finally, the researchers' recommendations include adding a certain element or ingredients to give a pleasant smell to the current mixture since among all of the data gathered, the odor garnered the lowest weighted mean computed. Aside from that, they also recommend using a container that is less flammable or even unflammable to reduce harm to the user and the environment. In addition, they also suggest further investigation into the fire extinguisher ball's effectiveness for other classes of fire, particularly the class C and K types, as well as expanding its

perimeter and improving its longevity through further research and experiments. Therefore, implementing these recommendations could result in several benefits for beneficiaries: (1) Homeowners can have an accessible and cost efficient way to fight fires while reducing harm to users and the environment through the use of less flammable or nonflammable containers. (2) Fire protection officers can improve their fire safety and response strategies through further investigation into the fire extinguisher ball's effectiveness for different classes of fire. (3) Students and teachers can use this research to learn about fire safety, practical science experiments, and inspire further innovations in this field. Finally, (4) future researchers can build on this study's foundation to explore new developments and improve fire safety measures, such as expanding the fire extinguisher ball's perimeter and increasing the product's longevity.

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**Leadership Style and Self-Esteem of Student Leaders at Olivarez College Tagaytay
S.Y. 2022-2023**

Fenol, Joven A.**Leynes, Joyce Elaine V.****Maala, Mary Divine D.****Magsino, Marian M.****Manuel, John Wendell M.****Palad, Maeghan G.****Quinto, Andrea P.****Rosel, Ian Francis A.****Sta. Maria, Mark Bryan D.****Suiza, Sean Louis B.****Vidallon, Sher-Ann May O.****I. Abstract**

Self-esteem and leadership style are important factors that affect student leaders' performance. Student leaders face numerous challenges, and self-esteem can be their strongest weapon to overcome them; however, some officers with negative self-esteem have doubts about their leadership styles. The purpose of this study was to determine the self-esteem of the leadership style of student leaders. The researchers used Quantitative Descriptive Research and purposive sampling technique. While the data were collected through a survey questionnaire, the researcher used a modified adapted questionnaire for self-esteem and a Preliminary Development of an Assessment Tool for leadership style. With a total of 33 items, the reliability test of the questionnaire produced a score of .900 and a good interpretation. The information gathered from the survey questionnaire is analyzed using statistical methods, including frequency counts, percentages, and means. Overall, the study revealed that authoritarian leadership has a high level of self-esteem while the two other leadership style, democratic and laissez-faire has an average level of self-esteem. It also showed that the democratic leader had the most effective leadership style of every student leader. The researcher recommended student leaders improve their self-esteem and use it in their preferred leadership style. Future researchers can conduct a study on the different leadership styles and how student leaders manage their subordinates utilizing those styles of leadership

Keywords: Self-esteem, leadership style, authoritarian, democratic, laissez-faire, student leaders

II. Introduction

Self-esteem is an evaluation of a person's attitudes and ideas about his or her capabilities and beliefs (Rosenberg 1965, Zhao et al. 2021). Self-esteem is an important factor in the success of any organization, including educational institutions. It is a determinant of educational institution effectiveness in terms of productivity and job satisfaction (Ngussa, 2017). As a matter of fact, self-esteem can be the students' strongest weapon as they face many challenges as a leader. (Mathews et al. 2016) found that self-esteem is quite high and level of self-esteem is also associated with high levels of leadership orientation.

Effective leadership comes from effective communication and maintaining strong relationships with classmates and members. The most enduring and well-known leadership styles are authoritarian, democratic, and laissez-faire, (Amini et al. 2019). Authoritarian leadership is a style of leadership in which the leader makes all decisions with minimal participation from their subordinates. Democratic leadership is where group members take a more active part in the decision-making process. Lastly, laissez-faire is a style in which the leader omits giving those under their supervision timely feedback. Additionally, a leader's leadership style describes how they direct, motivate, guide, and manage groups of people, inspiring others to excel, create, and innovate (Kendra, 2020).

Nowadays, most student leaders with positive and high self-esteem excel in terms of academic performance and leadership, they have little trouble motivating and inspiring others to do their best work. However, some officers with negative self-esteem have doubts about their leadership styles. A leader who lacks self-esteem is frequently authoritarian, a micromanager, and someone who does not conduct in a way that promotes others' development and opportunities. They frequently take credit for the efforts of others (Seredich, 2017).

Moreover, students' levels of self-esteem significantly influence how they view leadership (Gunel, 2021). This study focuses on students' leadership styles and how self-esteem influences how they function as leaders. The information gathered from respondents will be used to generate useful data for future researchers, and students' answers based on their personal experiences will be used to keep the study moving forward.

The purpose of this study was to determine the level of self-esteem and leadership styles of student leaders at Olivarez College Tagaytay. Furthermore, this study aims to identify the degrees of self-esteem of respondents according to their leadership styles.

Leadership is a critical performance area at work that drives every company's bottom line. Student Leaders with low self-esteem have poor communication with their employers and are more likely to be underproductive in the workplace. On the other hand, a high sense of self-esteem can develop into narcissism. There are studies of student leaders about self-esteem and leadership, but most are focused on the leadership skills of student leaders. Therefore, investigating the relationships between leadership styles and student leaders' self-esteem was deemed necessary. According to Raffie, (2016), this research is crucial to identifying, examining, and describing the personalities and connections between organizational cultures, leadership trajectories, and the need to learn more about the subject through interviews and performances of observational research to establish the significance of leadership style in universities.

The purpose of this study was to determine how high or low the self-esteem of leadership styles of student leaders of senior high school students at Olivarez College Tagaytay. This research also seeks to study how a leader's leadership style describes how they direct, motivates, guide, and manage groups of people. This study could be a help to the students to identify the leadership style of their leader and how it helps them to govern their members or subordinates.

This study determined the self-esteem and leadership style of student leaders of Olivarez College Tagaytay S.Y. 2022-2023. Specifically, the study sought to answer the following questions:

1. What is the demographic profile of the respondents in terms of;
 - 1.1 Gender
 - 1.2 Type of Officer
 - A. Class Officer
 - B. Club Officer
 - C. Student Council Officer
 - D. Student Body Organization Officer
2. What is the level of self-esteem of the respondents?
3. What are the leadership styles of the respondents?

4. What is the corresponding level of self-esteem for a particular leadership style among the respondents?

This study will be beneficial to students, student leaders, class and club officers, teachers, school coordinators, and those who will be elected as an officer. It will provide information about how high or low the self-esteem of a student leader is based on their leadership style. It will also be beneficial to future researchers as it provides information regarding how negative self-esteem can affect the leadership style of a leader. Additionally, it may help readers who are self-conscious or lack the courage to lead and have a thorough knowledge of the various strategies and modes of performing effective leadership.

This theory is based on Lewin's Leadership Theory by (Lewin 1939, UAGC Staff Member 2022) and Identity Theory by James (1890 and Stets (2014). The most effective leaders, according to Lewin's Leadership Theory, are those that can change their leadership style as needed to get the best performance out of their team members. They must recognize the necessity for situational understanding and be adaptable in their approach. The three types of leadership are autocratic, democratic, and laissez-faire and none of them is best. It all depends on the circumstance at hand and the leadership style and strategies that are most suitable for the task. In combination with Identity theory, William states that self-esteem is equal to achievement divided by our aspirations. We perceive ourselves as failures if our actual achievements are low and our perceived potential and ambitions are high. However, if our accomplishment exceeds our expectations and we can remember a similar experience, we feel fantastic about ourselves. Therefore, if we can effectively implement having high self-esteem and use one of the leadership styles, we will be successful in being an effective leader.

III. Methodology

In order to know the self-esteem and leadership style of student leaders in Olivarez College Tagaytay, the researchers used Quantitative Descriptive Research Design since it focuses on knowing how high or low the self-esteem is based on the leadership style of the student leaders. This research design aims to describe the characteristics of the population or phenomenon that is being studied. According to Bhat, (2019), this method attempts to collect quantifiable information

to be used for statistical analysis of a population. It also allows describing the nature of the demographic segment.

The respondents of the study are the student leaders of Olivarez College Tagaytay. The researchers utilized the purposive sampling technique because they chose the individuals based on their personal preferences. According to Etikan et al. (2016), a component of the judgment sampling approach, also known as purposive sampling, is the planned selection of a participant. This nonrandom technique does not necessitate any underlying theory or a set number of participants. Purposive sampling (also known as judgment, selective, or subjective sampling) is a sampling method in which the researcher chooses individuals from the population to participate in the study based on his or her own judgment. It is a non-probability sampling approach in which items for the sample are chosen based on the researcher's judgment because the researcher thinks that by using sound judgment, a representative sample may be obtained while saving time and money.

The respondents of the study are the 342 student leaders in Olivarez College Tagaytay. To obtain the participants from the given population, the researcher used the purposive sampling technique. The participants were selected based on three criteria. The first requirement is that the participants must be student leaders of Olivarez College Tagaytay in s.y. 2022-2023. The second criterion is that the student leaders must be 15 to 20 years old and the last criterion was that the student leaders are currently studying at Olivarez College Tagaytay.

The researcher used a modified questionnaire from the study of the Preliminary Development of Assessment Tool of Leadership Style (Northouse 2009, Fatima 2020) to gather data and identify the leadership style of the leaders. Each category of leadership style consists of 6 items. Also, from the study of Hafekost (Hafekost K 2017) wherein the survey was used to determine global self-worth by measuring positive and negative feelings about the self.

The researcher asks permission from the principal and panels to conduct this study and prepare a consent paper for the research adviser and the respondents. For the respondents' privacy, the researchers made sure that their information was safe and would not be shared with anyone. Furthermore, the researchers will first explain the research topic to the respondents so that they are aware of the survey. The goal was to collect survey responses from the student leaders of Olivarez

College Tagaytay. After permission was given, the researchers distributed the survey questionnaire through a Google Form, and it was tabulated. The survey was used to help leaders understand their preferred style. After gathering the data, the researchers are going to utilize statistical treatment to analyze and interpret the responses of the respondents.

The researchers used statistical treatment to analyze the response of the student leaders of Olivarez College Tagaytay. The demographic profile of the respondents was determined with the use of frequency and percentage. Also, the frequency and percentage were used to determine how high or low the self-esteem of a student leader was based on the leadership style of student leaders. For the interpretation of the findings from the survey questionnaire, the researchers used score and mean range.

SELF ESTEEM

RANGE	QUALITATIVE DESCRIPTION
3.26 -4.00	High
2.51 - 3.25	Average
1.76 - 2.5	Below Average
1.0 - 1.75	Low

LEADERSHIP STYLE

RANGE	QUALITATIVE DESCRIPTION
3.26 -4.00	Very Practice
2.51 - 3.25	Practice
1.76 - 2.5	Slightly Practice
1.0 - 1.75	Not Practice

IV. Results

Problem 1. What is the demographic profile of the respondents in terms of gender and type of officer?

Table 1.1 Gender of the respondents

Gender	Frequency (f)	Percentage (%)
Female	221	64.62
Male	121	35.38
TOTAL	342	100%

Table 1.1 shows the frequency and percentage of the gender of the respondents. First, 221 or 64.62% of the respondents were female; second, 121 or 35.38% of the respondents were male; with a total number of 342 respondents. The result presents the majority of the gender was female. Barker & Anest, (2015) state that female student leaders tend to have high emotional intelligence, empathy, and excellent communication skills. They are also known for their ability to build and maintain positive relationships, which helps them to motivate and inspire their peers.

Table 1.2 Type of officer

Type of Class Officer	Frequency	Percentage
Class Officer	199	58.20%
Club Officer	88	25.70%
Student Council Officer	28	8.20%
Student Organization Officer	27	7.90%
TOTAL	342	100%

Table 1.2 displays the frequency and percentage of each sort of officer. Class officers made up 58.2% of the 199 respondents, Club officers made up 25.7% of the 88 respondents, Student club officers made up 8.2% of the 28 respondents, and Student organization officers made up 7.9% of the 27 respondents with total percentage of 100% of the 342 respondents. It indicates that the majority of respondents to the question about what kind of officer you are, are class officers.

Problem 2. What is the level of self-esteem of the respondents?

Table 2 Self-esteem of Officers

Type of Officer	Weighted Mean	Verbal Interpretation
Class Officer	3.19	AVERAGE
Club Officer	3.24	AVERAGE
Student Council Officer	3.30	HIGH
Student Organization Officer	3.25	HIGH
TOTAL	3.27	HIGH

Table 2 shows that the class officer obtained a verbal interpretation of average and a weighted mean of 3.19, while the club officer received a verbal interpretation of average and a weighted mean of 3.24. Student council, on the other hand, received a weighted mean of 3.30, and the student organization officer had a weighted mean of 3.35; these two types of officers attained high for verbal interpretation. The data gathered from the respondents presents that the verbal interpretation including all types of officers is high and the general weighted mean is 3.27.

The overall results revealed that Officers of the Student Council and Student Organization had higher self-esteem than class and club officers. The outcome manifests that questions associated with high verbal interpretation were more about standing for their selves, striving hard and not giving up after being down. Same as what Theodore Roosevelt write in his article in the year 1905, believe you can and you are halfway there (Roosevelt 1905, Sha 2022). The results also imply that the respondent's environment, experiences, and lifestyle have an impact on their self-esteem, a change in the environment where an officer takes place, there is a chance of creating a more increased or boosted self-esteem. According to Allegra Sinclair (2016), your self-esteem will

increase if you adjust to the environment. It also shows that the respondents started to gain confidence in their ability in comparison to others. By encountering different people in their lives, they are able to cope with those things they were not able to do before. Learning by experience is a model that can help each person earn skills and gain knowledge (Austin, 2022).

Problem 3. What are the leadership styles of the respondents?

Table 3 Leadership style of the respondents

Authoritarian Leadership	Mean Score	Verbal Interpretation
1. Members must be closely supervised otherwise they are unlikely to complete their tasks.	3.30	VERY PRACTICE
2. It's reasonable to assume that the majority of members are lazy	2.75	PRACTICE
6. Members must often be rewarded or punished in order to be motivated to fulfill the organization's objectives.	3.19	PRACTICE
10. The most of members need guidance since they feel insecure about their work.	3.27	VERY PRACTICE
15. The group's leader is the primary judge of members' accomplishments.	3.17	PRACTICE
16. Effective leaders give instructions and clear procedures.	3.63	VERY PRACTICE
Overall Weighted Mean	3.22	Practice
Democratic Leadership	Mean Score	Verbal Interpretation
4. Members are interested in being involved in decision-making	3.37	VERY PRACTICE
5. Being an effective leader includes providing guidance without applying pressure.	3.61	VERY PRACTICE
8. The majority of members seek frequent and encouraging communication with their leaders.	3.38	VERY PRACTICE
11. Leaders must assist members in accepting responsibility for accomplishing their work	3.53	VERY PRACTICE
14. It is the leader's responsibility to assist members in discovering their "passion."	3.25	PRACTICE
18. People are generally capable and will do a task well if given the opportunity.	3.40	VERY PRACTICE
Overall weighted mean	3.42	Very practice

Laissez-faire Leadership	Mean Score	Verbal Interpretation
3. In difficult situations, leaders should let members handle problems on their own	2.60	PRACTICE
7. Leadership means staying out of the way of members and allowing them to work independently.	2.90	PRACTICE
9. Leaders should always let members to analyze their own work.	3.14	PRACTICE
12. Leaders should allow members complete freedom to resolve issues independently.	3.32	VERY PRACTICE
13. In most circumstances, members prefer to receive a little guidance from their leader.	3.37	PRACTICE
17. It is usually advisable to leave members alone.	2.46	PRACTICE
Overall Weighted Mean	2.97	Practice

Table 3 is about authoritarian leadership which shows the mean score and description gathered from the respondents. Among the six given situations, *effective leaders give instructions and clear procedures* that can be verbally interpreted as *very practiced* and gained the highest mean score of 3.63; while *It's reasonable to assume that the majority of members are lazy* can be verbally interpreted as practiced with the lowest mean score of 2.75. According to (Dastane, 2020) this leadership style can be identified by several characteristics, such as the fact that the followers are given entire independence in the decision-making process and with minimal advice from the leaders. The group members are supposed to be independent and capable of solving the problems on their own, even though any tools and resources required are completely given by the leaders.

The table about democratic leadership shows the mean score and description gathered from the respondents. Among the six given situations, *being an effective leader includes providing guidance without applying pressure, obtaining* the description *very practice*, and gaining the highest mean score of 3.61; while *It is the leader's responsibility to assist members in discovering their "passion."* obtained the description *practice* and gained the lowest mean score of 3.25. According to (Rifaldi 2019 and Dastane 2020) the democratic focus on group equality and free-flowing ideas will encourage their team members to share any thoughts. Nonetheless, the leader will still be required to provide guidance and keep close oversight during the dialogue process to avoid any disputes and conflicts, especially when more than one individual has opposing viewpoints or perspectives from others.

The table about Laissez Faire leadership shows the mean score and description gathered from the respondents. Among the six given situations, *in most circumstances, members prefer to receive a little guidance from their leader, obtain the description very practice, and gained the highest mean score of 3.37*; while *in difficult situations, leaders should let members handle problems on their own* obtained the description *practice* and gained the lowest mean score of 2.60. As stated by Dastane (2020), this kind of leadership can be defined as delegative leadership, where the group members are given the freedom to make decisions while the leaders take a backseat. The Laissez-Faire leadership style may out to be the best one to use to maximize the outcome. In general, this leadership style may be identified by some characteristics, such as demanding less direction from the leaders and giving followers total discretion over decision-making. The group members are supposed to be autonomous and able to address the problems on their own, even while the leaders give the necessary tools and resources.

Problem 4. What is the corresponding level of self-esteem for a particular leadership style among the respondents?

Table 4 The Self-esteem of all leadership styles

Leadership Styles	Weighted Mean	Level of Self-Esteem
Democratic	3.25	AVERAGE
Laissez Faire	3.16	AVERAGE
Authoritarian	3.29	HIGH
Total	3.23	Average

Table 4 presents the self-esteem of particular leadership styles of the student leaders. It shows that those with an authoritarian leadership style have a high level of self-esteem with a weighted mean of 3.29. Among the three (3) specific leadership styles, authoritarian leadership has a high level of self-esteem. Those with democratic and laissez-faire have an average level of self-esteem. This means that most student leaders can stand up for themselves and control their subordinates. As stated by Alexei (2020) authoritarian leadership influences followers by improving self-efficacy and self-esteem. Authoritarian leaders frequently exploit their

organizational structures to enforce full obedience to their subordinates. (de Hoogh et al. 2015, Pizzolitto 2022).

V. Discussion

Overall, the research revealed that the student leaders have a greater quantity of female students. The outcome reveals that all the student leaders from the class, club, council, and organization officers were successfully surveyed. Therefore, the researchers successfully accumulated their target. Among all three (3) specific leadership styles, the researchers found that most of the leadership styles of the student leaders are democratic leadership. In addition to that, the self-esteem of democratic leadership was verbally interpreted as average. This means that the student leaders are effective leaders by guiding without applying any pressure to their subordinates, and they assist their members in accepting responsibility for accomplishing their work.

However, those with authoritarian leadership have a high level of self-esteem. Among all the six (6) specific indicators under authoritarian leadership, effective leaders who gave instructions and clear procedures attained the highest weighted mean. It can be interpreted that the student leaders want their activities or projects to go well. They expect members to meet high job standards and penalize those who do not as stated by Wang et al. (2013) and Lee et al. (2019). Authoritarian leaders have strong self-esteem and arrange their activities to ensure that their subordinates do not contest their authority to attain these aims, according to Pizzolitto, (2022). Moreover, their high level of self-esteem gives them the strength to make their subordinates follow them. On the other hand, it is reasonable to assume that the majority of members are lazy and have the lowest weighted mean that can be verbally interpreted that the leaders see something wrong in their subordinates. Authoritarian leadership was found to have a considerable detrimental effect on both speaking up and speaking out according to Yan (2018).

While the laissez-faire level of self-esteem was verbally interpreted as an average level of self-esteem with a weighted mean of 3.16. Among the six (6) specific indicators under the laissez-faire leadership style, in most circumstances, members prefer to receive little guidance from their leader to attain the highest rating, while it is usually advisable to leave members alone to have the

lowest rating. This means that most of the student leaders who have a laissez-faire leadership style prefer to not control members and just guide them when they are seeking help. According to Davis, (2018), these hands-off leaders provide their followers with the complete freedom to make decisions and solve workplace problems. Laissez-faire leaders provide little or no direction to their followers and commonly do not use their authority.

As shown in the findings above, the authoritarian leadership style has the highest level of self-esteem among all three (3) categories of leadership style. In accordance with the indicators under the authoritarian leadership style, the study showed that leaders want to give their members clear instructions and procedures to accomplish their objectives. Due to their high level of self-esteem, they are using their power to control their members. According to Chen (2017) and Wang (2018), authoritarian leaders demand the best performance from their subordinates by exercising rigorous control, establishing explicit rules, specifying work tasks, and administering punishment and rewards. As a result, members are highly motivated to create high-quality results. However, the overall finding of the study shows that almost all respondents in each leadership style have high levels of self-esteem. The authoritarian has the highest level of self-esteem, while the one with the most style of leadership is democratic, and the lowest is laissez-faire.

To clarify, this study did not further research on other leadership styles like participative, transformational, facilitative, etc. The researchers mainly focus on the self-esteem of three (3) common leadership styles which include authoritarian, democratic, and laissez-faire leadership styles. However, the data collected will not put an end to discoveries on how self-esteem affects the leadership of students. Therefore, more in-depth studies will need to be done to ascertain other significant information.

Future researchers may consider conducting qualitative research to deeply understand how high or low self-esteem affects their leadership. They may also consider conducting a study on how each leader leads their members and how they apply the leadership style they have in their leadership. Qualitative methods will allow future researchers to examine and interview student leaders on how they rule their members. The qualitative research with this study can easily explore and identify the problems of the student leaders when leading their members.

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Olivarian Hymn

To you dear Olivarez College
Faithful children we will be
With the golden hearts to last forever
We vow for eternity

REFRAIN

To the gold, red and green
We pledge our loyalty
Our light, our guide and our hope
Olivarez College

Our knowledge will last forever
To serve humanity
The Christian teachings given us
Shall forever be in our hearts

(Repeat REFRAIN twice)



Emilio Aguinaldo Highway, Brgy. San Jose, Tagaytay City

(046) 860-2301

(+63) 921 535 7977

OC Tagaytay Official

www.olivarezcollegetagaytay.edu.ph