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FOREWORD



In this world where almost everything can be sold and bought, resources tumble, and needs change rapidly, we need scientific knowledge. Sharing knowledge and exchanging experiences are essential means of communication across borders.

Hence, Olivarez College Tagaytay considers publishing research papers part of the 5Ps Research Paradigm that Olivarians religiously follow – *Promote, Produce, Present, Publish, and Practice*. All research activities are anchored on this paradigm. Dr. Jean Rizza Dela Cruz, head of the Olivarez College Tagaytay Center for Research, Publication, Planning, and Development, and Ms. Clarence Castillo, SHS Principal, ensured that Olivarez College Tagaytay continuously upholds research excellence.

Then here comes the **OCT-THE SPECTRUM**, an electronic journal that provides quality research works of senior high school students at Olivarez College Tagaytay. This contains many research outputs of the ABM, STEM, HUMSS, GAS, and TVL students. Their research projects were motivated to enhance the teaching and learning process, promote further enhancement of 21st-century competencies, improve the people's lives in the community, and enhance existing procedures.

Being guided by our research paradigm, we are confident that these research works bring enlightenment to the school community, society, and future researchers, for these are products of research students' and teachers' hard work and perseverance. Besides new findings, these could provide researchers with suggestions for new research directions and possible manners of approach, introducing them to new horizons of knowledge.

After the students successfully defended and completed their research projects, with the supervision of their research advisers and careful evaluation of the panel members and editorial board – this annual electronic research journal was finally born.

Maureen B. Encabo, LPT
Editor-in-chief

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OCT – THE SPECTRUM



**Research, Survey, and Publication of the
SENIOR HIGH SCHOOL DEPARTMENT
OLIVAREZ COLLEGE TAGAYTAY**

A quantitative research: Level of satisfaction of senior high school with modular learning in Olivarez College Tagaytay

Acma, Jeeyah Grace T.
Espineli, Bianca Diane G.
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Bausas, Julia Venus M.
Saripada, Mahdi A
Desigano, Annie
Carllimil D.

I. ABSTRACT

Competency-Based Learning Module is a student-centered learning approach that equips students with the resources they need to learn at their own level and select their own learning course. In order to assess whether this learning module is a successful way to learn, it is appropriate to measure the satisfaction of students in these learning modules to senior high school students especially at present where face-to-face interaction is not allowed and some with no internet connection at home rely on modules. This study aimed to determine the satisfaction of senior high school students with CBLM in Olivarez College Tagaytay. The researchers utilized a quantitative descriptive research design in their study with total respondents of 30 modular learners from different strands (ABM, STEM, HUMSS and TVL) that were selected using purposive sampling. Furthermore, the researchers used an adapted questionnaire from Llego in the Department of Education (2019). The results implied that the respondents are satisfied learning using CBLM in terms of learning objectives, learning experience, content and organization. Among the four categories, they are mostly satisfied with the learning objectives and least with organization. The researchers claimed that CBLM allows the learners to easily recognize and achieve the desired learning outcomes. The respondents only struggle with the time frame of accomplishing all their learning tasks. Hence, the researchers highly recommend module writers to review the outline of learning tasks focusing not only on kinds of assessment but also on the schedule of distribution and retrieval making it sure that the deadline is in accordance with the academic school calendar. They also recommend further orientation among teachers, students and parents on CBLM focusing on task accomplishment. Lastly, they also recommend future researchers to conduct

qualitative research to gain deeper understanding of the modular students' learning experiences as they conduct in-depth interviews.

Keywords: *quantitative research, Competency-based learning material, modular learning modality, SHS students, learning outcomes, learning experience, learning content, organization*

II. INTRODUCTION

Due to the pandemic, Olivarez College Tagaytay offers online and modular learning modalities to cater the needs of all students. Students may choose one from these modalities. Most students choose online learning modality and some students have decided to choose modules as a new alternative way to learn. Hence, in this study, the researchers focused on the modular learning modality.

Competency-Based Learning Module or CBLM was designed to develop and evaluate the competency of modular senior high school students in Olivarez College Tagaytay. Evaluating the satisfaction of students of these learning modules to senior high school students is important in order to determine if this learning module is a constructive way to learn. If one has to look closely at the contemporary problem of how to raise the quality of education, no matter what the discipline is, it would be obvious that the answer lies in the right educational objectives at one end.

According to Wigati, Maharta and Suyatna (2015), module is a learning tool in written form that is arranged systematically, contains learning material, methods, learning objectives based on basic competencies or indicators of achievement of competencies, instructions for self-learning activities, and provides opportunities for students to test themselves through the exercises presented in the module. In addition, Marion, Worthen and Evans, (2020) stated that competency-based education systems hold promise for maximizing high quality teaching and learning for the growth of all students. Such systems, if well designed and implemented, can serve critical equity aims by ensuring that all students are supported in meeting key learning and development targets. Hence, Competency-Based Learning Modules (CBLM) is a student-centered learning approach that provides the students with learning tools that need to learn at their own pace and make choices about the sequence of their learning (Abuga, 2019).

Based on the previous study of Sutherland et al. (2019), understanding the links between student satisfaction and module teaching quality is a concern. It explores the determinants of overall student module satisfaction, as well as their relative importance of modules. Readings and feedback on formative assignments appear weaker drivers of overall satisfaction, particularly

for students, as is the negative impact of perceived module difficulty. Module difficulty, however, is a strong driver of dissatisfaction for both groups, raising the question of whether excessive use of modules may lead to 'dumbing down' processes in higher education. Additionally, Klimmek et al. (2017), claimed that one must guarantee a successful learning experience and process, and ensure students' satisfaction. Ensuring the quality of students' learning process and further it shall serve the question how students and lecturers can visualize students' learning process within specific module topics to provide a highly visible learning environment.

Furthermore, as stated by Malipot (2020) based on the survey conducted by DepEd on school opening, modular learning is the most preferred learning delivery of parents for their children this school year thus previous studies examined states that competency-based learning offers a different systems model for teaching and learning. However, instead of standardized one-size-fits-all instruction, competency is personalized for every essential skill along the pathways to higher levels of skill and knowledge have not examined the performance, the student's satisfactions, organized and constructive using Modular as efficient way to develop the competency based in as the way of learning for the students (Sornson, 2016).

According to Jim (2020), problems are arisen as to how students who do not have stable internet connectivity will have access to education amidst this pandemic. Educators, parents, and students have different views on this issue, but the Department of Education proposed different modalities of learning. One of which is modular distance learning. Previous studies of Jim have not examined the satisfaction of the students with this CBLM, thus it focuses on how modular works on senior high school students. It is clear that many senior high school students with a certain level of interactive technology are embraced, but at the same time continually demanding more to fulfill their diversified needs of learning. Embrace the technology demands of their own class.

This study is anchored to Knowles theory which states that self-directed learning has been described as “a process in which an individual's takes the initiative with or without help of others” to diagnose their learning needs, formulate learning goals, identify resources for learning, select and implement learning strategies and evaluate learning outcomes. Knowles theory and the researchers study shows how modules can develop their skills and meet the student's satisfaction in using modules as the way of learning.

This study aims to evaluate the satisfaction of senior high school students on the performance of Competency Based Learning Modules from Olivarez College Tagaytay. At the end of this research, it is envisioned that students, teachers and even the school are able to benefit by identifying if learning modules or CBLM are satisfied from modular learners as a tool used in the new mode of learning. This study seeks to answer the following questions:

1. What is the demographic profile of the respondents in terms of age, gender, grade, and strand?
2. What is the satisfaction level of the senior high school students in using Competency-Based Learning Materials in terms of learning objectives, learning content, organization and learning experience?
3. What is the overall satisfaction level of the students in using CBLM in Olivarez College Tagaytay?

III. METHODS

Since this study focused on determining the satisfaction of senior high school students in using Competency-Based Learning Module in Olivarez College Tagaytay, the researchers used quantitative descriptive research design as this attempts to collect quantifiable information for statistical analysis of the population sample towards a phenomenon using an observational method. The researchers used convenience sampling techniques in selecting participants. The researchers used a total population of 30 from grade 11 and 12 senior high school students of Olivarez College Tagaytay to participate in the study. The ABM strand has 4 respondents, then 12 respondents in the HUMSS strand, 7 respondents in STEM strand and TVL strand has 7 respondents.

The researchers used an adapted questionnaire from Llego (2019) in gathering the data from the respondents of the sections mentioned. Before gathering data, the researchers prepared the survey questionnaires. With the help of their research adviser, the questionnaires were distributed personally to the parents of the respondents. After that, the researchers used different statistical treatments such as percentage, frequency and mean that were used to determine and analyze the demographic profile of the respondents while the mean score was used to interpret the response of the participants on the survey questionnaire. For the purpose of arriving at a definite interpretation of the findings, the researchers score and mean ranges for the scale.

Scale Ranges

3.26 - 4.00

2.51 - 3.25

1.76 - 2.50

1.00 - 1.75

Qualitative Description

Very Satisfied

Satisfied

Slightly Satisfied

Not Satisfied

IV. RESULTS

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

1.1.age,

1.2.gender,

1.3.grade level, and

1.4.strand?

Table 1

Age of the respondents

Age	Frequency (f)	Percentage (%)
16	5	16.67
17	10	33.33
18	12	40
19	3	10
Total	30	100 %

Table 1 shows the frequency and percentage of the age of the respondents. First, the respondents at the age of 16 years old were 5 or 16.67%. Second, 10 or 33.33% of the respondents were 17 years old. Third, 12 or 40% of the respondents were 18 years old. Last, 3 or 10% of the respondents were 19 years old, for the total number of 30 respondents. It presents that most of the students from grade 11 and Grade 12 are 18 years old which is the average age of senior high students who are more appropriate to determine the number of students who used modular.

According to Matanluk et al. (2013), mostly of the students who has the ability to perform module are from the adolescents age which is important to have clear, achievable goals or outcomes for module, that they will have the chance to achieve their learning outcomes from statements of what skills, knowledge, or learning a student when they completed the module.

Table 2*Gender of the respondents*

Gender	Frequency (f)	Percentage (%)
Female	13	43.33
Male	17	56.67
Total	30	100 %

Table 2 shows the frequency and percentage about the gender of the respondents where there were 13 students or 43.33% of the respondents were female and 17 or 56.67% were male, with the total number of 30 respondents. It presents that the majority of the modular students in Olivarez College Tagaytay are male. Data state that modular learners have a greater quantity for male students. Furthermore, the composition of gender shows that male is more than female respectively (Sundaram, 2021).

Table 3*Grade of respondents*

Grade	Frequency (f)	Percentage (%)
11	14	46.67
12	16	53.33
Total	30	100 %

Table 3 shows the grade level of the respondents. 14 respondents or 46.67% of the senior high school students were from grade 11. While 16 respondents or 53.33% of the senior high school were majority from grade 12 students. Sadiq (2014) stated that it is considering the individual differences among the grade 12 learners which necessitate the use of modules as of the most appropriate teaching techniques in order to help the individual grow and develop at her or his own pace.

Table 4*Strand of respondents*

Strand	Frequency (f)	Percentage (%)
ABM	4	13.33
STEM	7	23.33
HUMSS	12	40
TVL	7	23.33
Total	30	100%

Table 5 shows the frequency and percentage of the strand of each respondent. First, the respondents from ABM strand were 4 or 13.33%. Second, 7 respondents or 23.33% were in the STEM strand. Third, 12 respondents or 40% were from the HUMSS strand. Lastly, 7 respondents or 23.33% were from TVL strand, with the total number of 30 respondents. It presents that most of the students from Grade 11 and Grade 12 are from HUMSS strand which have the higher average frequency of senior high school students who are more appropriate to determine the number of students who used modular from the HUMSS strand.

According to Olkhovaya et al. (2016), humanities and social sciences were an important stage to understand fully their potential, the leading role of synergetic approach determining current improvements in curricula that develop the concept of module that has been considered as an innovative model to achieve the satisfaction of HUMSS students.

Problem 2. What is the level of satisfaction of senior high school modular learners in Olivarez College Tagaytay?

Table 5

Level of satisfaction of Senior High School modular learners

Indicators	Weighted Mean	Verbal Interpretation
I. Learning Objectives		
1. The objectives of the modules are clearly stated.	3.20	Satisfied
2. The objectives of the modules are specific, achievable and relevant.	3.00	Satisfied
3. The objectives of the modules are achieved at the end of the session.	3.07	Satisfied
II. Learning Content		
1. The content of the modules suited to my age, gender, and interests that are relevant to my life.	3.03	Satisfied
2. My skills and abilities fit the learning competencies and degrees of difficulty of activities in the modules.	2.83	Satisfied
3. My expectation is that the results/outputs of the module are achieved and manifested.	3.13	Satisfied
4. I can easily recognize each activity in the module that considers individual differences and uniqueness.	2.80	Satisfied
III. Organization		
1. For me, modules are well -organized in terms of content and flow.	3.03	Satisfied
2. The activities of my modules are sequenced in a logical manner.	3.13	Satisfied

3. The time given to me in conducting the module is sufficient and enough.	2.63	Satisfied
IV. Learning Experience		
1. The activities of my modules are completely aligned with the set of objectives.	3.23	Satisfied
2. The activities are responsive to my needs as I choose my strand in Senior High School.	3.23	Satisfied
3. I can easily conduct activities in my modules.	2.80	Satisfied
4. Provisions of materials make the learning process easy and meaningful for me.	3.03	Satisfied

Table 5 presents the level of satisfaction of modular learners with CBLM. First, in terms of the learning objectives among the three (3) specific indicators, “*The objectives of the modules are clearly stated.*” attained the highest rating while “*The objectives of the modules are specific, achievable and relevant.*” attained the lowest rating. Although lowest, it was still interpreted as ‘satisfied.’

The results show that the objectives of the modules are clearly stated and they seemed precisely written, important and doable for the students. In a study of Chasteen (2015), it is claimed learning objectives improved their instruction and the success of their students by the use of CBLM. Well-defined and articulated learning objectives are important because they provide students with a clear purpose to focus their learning efforts, direct the choice of instructional activities and guide assessment strategies.

On the other hand, in terms of learning content, among the four (4) specific indicators, “*The content of the modules suited to my age, gender, and interests that are relevant to my life.*” attained the highest rating while “*I can easily recognize each activity in the module that considers individual differences and uniqueness.*” attained the lowest rating. Although lowest, it was still interpreted as ‘satisfied.’

This shows that students appreciate the relevance of the content to themselves but few considerations concerning the activities have to be improved. Being marked as the lowest indicator, activities in the module could be reviewed to ensure it serves students’ individual differences and uniqueness. Similarly, in the study of Resita and Ertikanto (2018), students are considered to understand the learning concept of being able to change from one form to the other forms of representation to perform the suitable content of the module based on the satisfaction of students. Explicitly-stated learning goals give students a way to think and talk about what they have learned. They make it easier for students to “know what they know” and give students a language to communicate what they know to others.

Furthermore, in terms of organization of CBLM, among the three (3) specific indicators,

“For me, modules are well-organized in terms of content and flow.” attained the highest rating while “The time given to me in conducting the module is sufficient and enough.” attained the lowest rating. Although lowest, it was still interpreted as ‘satisfied.’

Therefore, students can easily recognize the outline topics and activities since the ‘Learning Experiences’ section is provided in every module where the list of topics and activities to accomplish were indicated. In the module itself, labels like ‘Information Sheet’ for lessons and ‘Written Works’ and ‘Performance Task’ for activities. These are indicated to help them easily identify the lesson and activity in the module for every week. However, the time to accomplish all learning activities seemed not enough. The result was related to the findings of Rienties et al. (2016), indicating that organization of the module had a strong and significant impact on satisfaction of the students. Well-organized courses encourage student motivation, performance, and persistence. Instructors can design their courses in many rich ways to cultivate student motivation and enhance opportunities for more effective learning. Learners who were more satisfied with the quality of teaching materials, assessment strategies, and workload were significantly more satisfied with the learning content, which showed the importance of satisfaction of modular learners in CBLM.

Lastly, in terms of learning experience of modular learners on CBLM, among the four (4) specific indicators, both “The activities of my modules are completely aligned with the set of objectives.” and “The activities are responsive to my needs as I choose my strand in Senior High School.” attained the highest rating while “I can easily conduct activities in my modules.” attained the lowest rating. Although lowest, it was still interpreted as ‘satisfied.’

It implies that aligning the activities to the objectives of the modules helped the learners to meet their needs, but they seemed to struggle with accomplishing the activities easily. According to Burge (2019), a successful module is one in which the stated learning outcomes or objectives align with teaching activity and assessment. It is important to align learning objectives with instructional strategies and assessments to ensure that everyone involved is aware of the expectations. The success criteria and teaching strategies need to be aligned with those assessments in order for the teacher to accurately evaluate the knowledge of the students. However, the students need to be supported and guided in order to learn the necessary skills to achieve the desired outcomes. This could be a point of review to module writers.

Problem 3. What is the overall satisfaction level of the students in using CBLM in Olivarez College Tagaytay?

Table 6

Overall level of satisfaction of the respondents in using CBLM

Categories	Weighted Mean	Verbal Interpretation
------------	---------------	-----------------------

Learning Objectives	3.09	Satisfied
Learning Content	2.95	Satisfied
Organization	2.93	Satisfied
Learning Experience	3.08	Satisfied
Overall	3.01	Satisfied

Table 6 shows the overall level of satisfaction of the respondents in using CBLM of Olivarez College Tagaytay. The data suggest that learning objectives attained the highest weighted mean of 3.09 which was verbally interpreted as satisfied while organization attained the lowest weighted mean of 2.93 which were verbally interpreted also as satisfied too. Hence, as seen in the table, all categories fall under ‘satisfied.’ This means that these areas: learning objectives, learning objectives, learning content, organization, and learning experience could be points of review for module writers to attain a higher satisfaction level of the students although the overall satisfaction respondents were rated as satisfied with the mean score of 3.01.

The result of this study is relevant to the study of Gahutu (2010), wherein the students seem to have appreciated the modular system of teaching and learning. However, the way in which the module of physiology was taught was critiqued even though the overall appreciation was good. This is not so much in relation with the module or the lecturer but rather with the new system. The appreciation of students for the different types of teaching and learning activities seemed to be confused by their low satisfaction due to the little amount of time allocated to classroom activities. However, they also had a great desire to learn much in practical classes and through demonstrations.

V. DISCUSSION

Overall, the study revealed that the respondents are satisfied with the CBLM mostly in terms of learning objectives as it allows the modular learners to easily recognize and accomplish their learning tasks in the module. This study supports Nic (2013), claiming that the use of learning objectives, linked with assessment design, helps the students to identify the background knowledge that a student must have in order to achieve the satisfaction of the respondents. On the other hand, the organization of CBLM that obtained the lowest mean score and is still regarded ‘satisfied’ has something to do with task accomplishment. The respondents claimed that they struggle with the time frame given to accomplish all their tasks. It coincides with Elliot (2013) where time management was emphasized. That is, it must be practiced by the modular learners to help them complete activities in a timely fashion, and to manage and stick to a schedule in complying modules at a given time.

Generally, the senior high school modular students at Olivarez College Tagaytay are satisfied with CBLM. CBLM allows them to continue learning in the comfort of their homes. To clarify, this analysis has only concentrated on the level of satisfaction of senior high school

students with CBLM in Olivarez College Tagaytay School Year 2020-2021. Although the researchers did get samples from all strands in senior high school, they were not able to gather data from many respondents since only 5-10% of the SHS students at Olivarez College Tagaytay prefer modular learning modality.

With all these mentioned, the researchers highly recommend to review the outline of learning tasks focusing not only on kinds of assessment but also on the schedule of distribution and retrieval making it sure that the deadline, in case will be adjusted, is still in accordance with the academic school calendar of Olivarez College Tagaytay. To date, the academic school calendar must be taken into consideration in setting the schedule of distributions and retrievals while achieving the desired outcomes from the student. It is important to have sufficient and enough time that will help the students to analyze every assessment in every question in order to answer it accurately.

According to Alelaimat and Ghoneem (2012), organization is divided into clear secondary factors and ideas which help the students to understand the module easily and presented in many forms with many references to be suitable with the capabilities and skills of the students in order to meet their conduct desired time to answer the module with a correspond time management. Aside from reviewing the learning tasks, the school administrators may also include in the orientation on CBLM contract with students, parents and teachers the further guidelines in accomplishing learning tasks so that everybody especially the students would have greater appreciation and understanding of the modules as learning materials.

To the future researchers, they may consider conducting qualitative research to gain deeper understanding of the modular students' learning experiences as they conduct in-depth interviews. They may also look for other factors that they may consider in studying their experiences.

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Coping strategies of the senior high school students towards online learning amidst pandemic

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I. ABSTRACT

Online learning has a huge impact on students as the Philippines is currently experiencing pandemic and this situation has immensely affected the education sector. This study aimed to determine the coping strategies of the senior high school students towards online learning amidst pandemic. The researchers used a quantitative descriptive approach to classify the most popular or used techniques for online learning of 120 senior high school students that were selected through stratified sampling technique. Researchers used modified study questionnaires focused on the three coping mechanisms of Endler and Parker (1990): task-oriented, emotion-oriented, and avoidance-oriented to gather the needed data. The researchers used percentage as the statistical tool for the demographic profile of the survey participants, while frequency will be used to get the mean scores to interpret the data gathered from the participants. This study revealed that among the three coping strategies, task-oriented coping strategies results were verbally interpreted as highly efficient. Emotional-oriented coping and avoidance-oriented coping resulted only as moderately efficient. In accordance with the result, students could best cope with their online tasks through exerting deliberate effort like outlining their tasks, setting a schedule for accomplishing these tasks then trying to accomplish them before the deadline. That is, coping starts with recognizing and accepting the tasks that they are to accomplish. Fantasizing how things turn out and escaping from them were regarded as not really helpful for coping with online class.

Keywords: coping strategies, SHS students, online learning modality, task-oriented, emotional-oriented, avoidance-oriented

II. INTRODUCTION

According to the World Health Organization (WHO), On January 30, 2020, the Department of Health reported the first case of COVID-19 in the country. Later on, the number of cases grew rapidly resulting in the declaration of quarantine locked-down in the country which affected the education system. The Department of Education came up with an idea of implementing a new normal system and they called it, “The Learning Continuity Plan.” It is the primary response for education to begin in the middle of the crisis for the coming academic year, and it involves core features on changes to the K-12 program, coordination of learning resources, different implementation modalities, and corresponding homeschooling teacher and parent/guardian instruction. With this new mode of the learning system, students struggle to adjust and cope with their studies.

In recent years, there have been many researchers who sought to determine the coping strategies of students towards blended learning. Based on studies, blended learning is one of the most common things that students and teachers used to interact with each other at a distance caused by the emergence of technology. Guzer and Caner (2014) stated that the use of blended learning is the most popular pedagogical method that was used years ago when new technology emerged to fill the gap between learners and instructors. Nonetheless, online learning is one of the only options among all others in this new learning environment. In using blended learning for online learning learners have flexible time frames and have the ability to learn at their own pace.

Consequently, students who are accustomed to face to face learning, struggle to cope with the online learning system. Hence, they experience stress, anxiety, and procrastination towards their tasks which leads to burnout. For instance, it has an overall generalization on experimentation studies where online learning has a great impact on student attitude, behavior, and academic performance where the problem is they cannot easily comprehend in some studies. Shantakumari and Sajith (2015) deliberated that students made it easy to follow and engage themselves through online learning upon their perspective and engagement on it. Generally, online learning does not only help students to have a better outcome in academic performance but also it affects their personal decision and interaction with other people. Debrock, Scagnoli, and Taghaboni-Dutta (2020) suggested that students must have a deeper engagement, planning and overall effort to cope with online learning which will result in having a better outcome with the efficiency of coping strategies.

This study is anchored on the theory of Endler and Parker (1989) on stress and anxiety. As to them, stress and anxiety are imperishable conditions in the daily lives of people. According to their research in 1990, a dealing behavior is a possible response to discern threats and effects of experiencing stress and anxiety. Therefore, coping strategies play a major role for everyone to

manage such stress or negative events such as coping with online learning. The researchers come up with three coping strategies (or styles): task-oriented, emotion-oriented, and avoidance-oriented. These coping strategies can distinguish how students cope with their stress in online learning. As a result, it will help everyone to meet their expectations in their capabilities.

However, previous researches have not further investigated the coping strategies of students towards online learning amidst a pandemic.. Since this was unanswered in the previous study, Endler and Parker (1989) recommended to future researchers to focus further on the development of situational measures of coping.

Hence, this premise motivated the researchers to determine the coping strategies of students towards online learning. Senior high school students were chosen to be the respondents of the study because before the pandemic, they are the students who already experienced the blended learning where aside from face-to-face class they are also into using Learning Management System.

Generally, this study also aimed to improve the strategies of the students in coping with the new mode of learning. It is to seek further about the common strategies used by the students and to clearly determine which is the most effective and which strategies need development. Specifically, this study sought to answer the following questions:

1. What is the demographic profile of the respondents in terms of:
 - 1.1. age,
 - 1.2. gender,
 - 1.3. grade level, and
 - 1.4. strand?

2. What are the coping strategies of senior high school students with online learning in terms of:
 - 2.1. task-oriented,
 - 2.2. emotion-oriented, and
 - 2.3. avoidance-oriented?

III. METHODS

The researchers used the quantitative descriptive approach to classify the most popular or used techniques for online learning of the senior high school students. For the current study, the researchers were engaged in collecting data, and gathering data for the study. Quantitative research methods employed in this study include stratified sampling, web-based questionnaires, and systematic data collection, and data analysis procedures.

The respondents of the study were the one-hundred twenty senior high school students at Olivarez College Tagaytay. By using stratified sampling, the researchers were able to select 60 students per year level from different strands (STEM, ABM/GAS, HUMSS, and TVL) and to gather samples and arrive at an efficient quantitative data.

To create an in-depth view of SHS students' coping strategies to online learning and to collect the source of evidence, the researchers utilized surveys through Google forms. Beforehand, the researchers asked approval from the school principal to conduct the survey among the selected SHS students. Upon receiving the approval, the researchers also asked the consent of the respondents through a letter before sending them the link to the Google Form. The respondents agreed that they fully understood the nature of the study as well as the confidentiality of the data and the anonymity of their identity and were willing to take part in the study..

The Google Form contains a modified survey questionnaire focused on the three coping mechanisms of Endler and Parker (1990): task-oriented, emotion-oriented, and avoidance-oriented. The researchers used percentage as the statistical tool for the demographic profile of the survey respondents while frequency was used to get the mean scores to interpret the data gathered from the participants. Below is the scale range to be used in order to arrive at the definite interpretation of the research findings:

Scale Ranges	Qualitative Description
3.26 – 4.00	Highly efficient
2.51 – 3.25	Moderately efficient
1.76 – 2.50	Less efficient
1.00 – 1.75	Not efficient at all

IV. RESULTS

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

- 1.1. age,**
- 1.2. gender,**
- 1.3. year level, and**
- 1.4. strand?**

Table 1

Age of the respondents

Age	Frequency (f)	Percentage (%)
16	31	25.83%
17	55	45.83%
18	31	25.83%

19	3	2.5%
Total	120	100%

Table 1 shows the frequency and percentage of the age of the respondents. First, 31 or 25.83% of the respondents were 16 years old. Second, 55 or 45.83% were 17 years of age. Third, 31 or 25.83% of the respondents were 18 years old. Lastly, only 3 or 2.5% were 19 years old students. The outcome reveals that most students were 17 years old, which are the average age of senior high school students. Overall, the researchers successfully accumulated its target respondents of one hundred twenty (120) students.

Table 2*Gender of the respondents*

Gender	Frequency (f)	Percentage (%)
Male	36	30%
Female	84	70%
Total	120	100

Table 2 shows the frequency and percentage of the gender of the respondents. It shows that 36 or 30% of the respondents were male and 84 or 70% were female, with the total number of 120 respondents. It represents that most of the respondents in senior high school were female. Likewise, Endler & Parker (1990) also found in their study that women scored significantly higher than did men on the Coping Inventory for Stressful Situations or CISS Emotion, Avoidance, Distraction and Social Diversion Scale.

Table 3*Grade level of the respondents*

Grade Level	Frequency (f)	Percentage (%)
Grade 11	60	50%
Grade 12	60	50%
Total	120	100%

Table 3 shows the frequency and percentage of the grade level of the respondents. It shows that 60 students or 50% of the respondents were from grade 11. Similarly, 60 students or 50% of the respondents were from grade 12. That is, equal sample sizes were obtained from both grade levels.

Table 4*Strands of the respondents*

Strands	Frequency (f)	Percentage (%)
TVL	35	29.17%
STEM	37	30.83%
HUMSS	20	16.67%
ABM/GAS	28	23.33%
Total	120	100%

Table 4 shows the frequency and percentage of the strands of the respondents. First, 35 or 29.17% of the respondents were from Technical-Vocational Livelihood (TVL). Second, 37 or 30.83% were from the strand of Science, Technology, Engineering, and Mathematics (STEM). Third, 20 or 16.67% were from Humanities and Social Sciences (HUMSS). Lastly, 28 or 23.33% of the respondents were from Accountancy, Business, and Management/ General Academic Strand (ABM/GAS). Overall, it shows that most of the respondents in senior high school were from the STEM strand.

For the data presented in Table 4, the sampling technique that the researchers used is the stratified sampling wherein the overall population is divided into strata or smaller groups to accomplish the process of data sampling. According to Adam Haves (2020), using this kind of sampling enables the researchers to acquire the best sample population that may represent the overall population.

Problem 2. What are the coping strategies of Senior High School Students to the online learning in terms of:

- 2.1. task-oriented,**
- 2.2. emotion-oriented, and**
- 2.3. avoidance-oriented?**

Table 5*Coping strategies of the senior high school students*

Indicators	Weighted Mean	Verbal Interpretation
Task-oriented Coping		
1. To be able to cope with my online learning activities, I outline and adjust priorities.	3.29	Highly Efficient
2. To be able to cope with my online learning activities, I set a schedule and stick with it.	3.28	Highly Efficient

3. To be able to cope with my online learning activities, I accomplish given tasks earlier than its deadlines.	3.43	Highly Efficient
Total	3.33	Highly Efficient
Emotion-oriented Coping		
4. To be able to cope with my online learning activities, I tend to be preoccupied with my personal problems and online classes.	2.83	Moderately Efficient
5. To be able to cope with my online learning activities, I maintain my patience to ensure things will go smoothly.	3.27	Highly Efficient
6. To be able to cope with my online learning activities, I tend to fantasize about how things might turn out.	3.08	Moderately Efficient
7. To be able to cope with my online learning activities, I maintain a harmonious relationship with my teachers and classmates.	3.30	Highly Efficient
8. To be able to cope with my online learning activities, I seek advice whenever I feel pressured by my school work.	3.18	Moderately Efficient
Total	3.13	Moderately Efficient
Avoidance-oriented Coping		
9. Whenever I feel stress from school work, I treat myself to a favorite food or snack.	3.12	Moderately Efficient
10. Whenever I feel stress from school work, I see a movie.	3.00	Moderately Efficient
11. Whenever I feel stressed from school work, I take time off and get away from the situation for a while.	3.33	Highly Efficient
12. Whenever I feel stress from school work, I spend time with friends.	3.03	Moderately Efficient
Total	3.12	Moderately Efficient

Table 5 shows the individual items under the coping strategies of task-oriented, emotion-oriented, and avoidance-oriented. In terms of task-oriented coping strategies, among the three (3) specific indicators, accomplishing given tasks earlier than its deadlines to be able to cope with the online learning activities obtained the highest weighted mean of 3.43 which is verbally interpreted as highly efficient. Meanwhile, setting a schedule and sticking with it to be

able to cope with the online learning activities obtained the lowest weighted mean of 3.28 which was also verbally interpreted as highly efficient.

This implies that students comply with the given tasks earlier than the deadline to be able to manage studies easily and avoid piling up of workloads and procrastination despite the struggle of following their set schedule of accomplishing learning tasks. In the research of Endler & Parker (1990), the highly correlated with the Ways of Coping Questionnaire or WCQ Problem-Focused subscale is Multidimensional Coping Inventory or MCI task oriented. According to the results, it means that task-oriented coping is the most used coping strategy and is believed to be the most efficient for the students, as well as for other people.

On the other hand, in terms of emotion-oriented coping strategies, among the five (5), maintaining harmonious relationships with their teachers and classmates to be able to cope with online learning activities attained the highest weighted mean of 3.30 which is verbally interpreted as highly efficient. Meanwhile, tending to be preoccupied with personal problems and online class to be able to cope with online learning activities attained the lowest weighted mean of 2.83 which is verbally interpreted as moderately efficient. In this category, students tend to maintain harmonious relationships with their teachers and classmates to be able to handle their tasks easily. They allow themselves to be guided well by their teachers and are able to ask for help from their classmates undoubtedly and comfortably.

In the study of Endler and Parker (1994), the CISS Emotion and Avoidance scales were found to be moderately associated with the Defense Style Questionnaire or DSQ Neurotic Defenses scale, which contains items measuring a range of emotional regulation and substitute task activities in women. This proves that emotion-oriented coping strategies are moderately efficient for the students, especially for the female students.

Lastly, in terms of avoidance-oriented coping strategies, among the four (4) specific indicators, taking a time off and getting away from the situation for a while whenever they feel stress from school works attained the highest weighted mean of 3.33 which is verbally interpreted as highly efficient. Meanwhile, watching a movie whenever they feel stress from school work attained the lowest weighted mean of 3.00 which is verbally interpreted as moderately efficient. That is, students tend to take a break and keep away from their battles for a while whenever they feel in distress about it. It is their way of saving their will to keep going and to still be able to cope with it.

Endler and Parker (1990) also stated that socializing with friends and family is mentioned in a number of MCI Avoidance subscale objects (e.g., "Spend time with a special someone" and "Visit a friend") which also results, the MCI Avoidance subscale and the WCQ Seeking Social Support subscale have a moderate correlation. This also proves that Avoidance-oriented coping is moderately efficient for the students

Overall, task-oriented coping strategies obtained a weighted mean 3.33 and this is verbally interpreted as highly efficient. This is followed by avoidance-oriented with 3.13 which is very close to 3.12 weighted mean for emotion-oriented coping strategies. Both are verbally interpreted as moderately efficient.

Hence, many coping models, according to Endler and Parker (1992), discern a third basic dimension—avoidance-oriented coping, which includes both mission- and person-oriented strategies. Distraction is used to describe task-oriented avoidance, while social diversion is used to describe person-oriented avoidance. An individual may escape a stressful situation by doing something else or by searching out for a social diversion. Endler and Parker (1992) also stated that the individual confronts the stressful task in task-oriented coping. However, when an individual uses distraction coping, he or she replaces one job with another of his choosing.

V. DISCUSSION

Overall, this study revealed that among the three coping strategies towards online learning, task-oriented is highly efficient for the senior high school students. This proved that most of the students make themselves task-oriented with all their responsibilities to cope with the online learning whereas both emotional-oriented and avoidance-oriented coping strategies were both regarded as moderately efficient. This could imply that students could best cope with their online tasks through exerting deliberate effort like outlining their tasks, setting a schedule for accomplishing these tasks then trying to accomplish them before the deadline. That is, coping starts with recognizing and accepting the tasks that they are to accomplish.

In the research of Endler and Parker (1990), the highly correlated with the WCQ Problem-Focused subscale is MCI task oriented. According to the results, it means that task-oriented coping strategies are the most used coping strategies and are believed to be the most efficient for the students, as well as for other people based on Endler & Parker.

However, it should be noted that this study only examined the coping strategies of senior high school students towards online learning since the Philippines is currently experiencing COVID-19 pandemic crisis, which caused the country to stick with conducting a new educational system. Other factors that may also contribute to their success in coping with online classes were not included. Also, the specific causes and effects of online class to students that lead them to doing their coping strategies were not also covered in this study.

With the abovementioned, the researchers recommend a seminar for the students and guardians discussing the implementation of online classes. This is to prepare not only the students but also their guardians who could be of help to them at home. The students should be given proper and more guidance from the school and at home since they are just starting to adapt with online learning. In this way, needed support in coping with online class tasks could also be given to the students in the comfort of their homes and students' appreciation to online class

activities will also improve. The higher value and appreciation they regard online learning, the lesser the need for them to cope because they understand the need of doing such online and offline tasks.

Hence, in the widely used mode of learning such as online and modular classes, the students could feel stress with their school work. The demand in school reinforces them to practice doing coping strategies to accomplish their tasks. To cope with stress in online learning, students should try to take a break for a while and give some personal time to themselves - treat oneself. In addition, why not the school that the students are in, give some time to seminar the mental health of the students because people don't know what they are thinking, some might have harmful thoughts about themselves because of the stress that they are experiencing. Also, students may do the things that they know that can free all their stress such as hanging out with friends and have some deep talks about happenings in life or if they love to watch movies to relieve stress, then might as well go for it. In this case, Avoidance-oriented coping takes place. This type of coping is also believed to be an essential to everyone. Make oneself free from stress.

For the future researchers, the researchers of this study recommend to further investigate about what is the proper coping strategy that is healthy, effective, and efficient for the students since this study is limited to only distinguishing what are the coping strategies and not what is the felicitous coping strategy that should be exercised by the students.

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**Analytical thinking skills: Level of abstract reasoning among grade 12 students
of Olivarez College Tagaytay S.Y. 2020-2021**

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I. ABSTRACT

The existence of abstract reasoning makes abstract reasoning substantially difficult due the presence of distracting features which disrupt the learning of students in statistical models and make it harder to categorize and characterize the true reasoning patterns (Steenbruge, 2018). The aim of this study was to determine the level of abstract reasoning of grade 12 students of Olivarez College Tagaytay. The researchers used quantitative-descriptive research design to describe the level of abstract reasoning skills of grade 12 students that were selected with the use of stratified random sampling technique and slovin's formula. The researchers used an Abstract Reasoning Test adapted questionnaire from Charles Spearman in gathering the needed data, and utilized different statistical treatment such as frequency and percentage for the demographic profile of the respondents, while weighted mean score in analyzing and interpreting the collected data from the survey questionnaire. These studies revealed that the majority of the respondents were female and grade 12 students. In addition, the researchers found out that the level of abstract reasoning skills of students were below average because they lack logical reasoning. On the other hand, the students are considered as aware of the presence of analytical thinking that helps them to improve their performance in thinking skills. In general, the researchers concluded that the Grade 12 students were inefficient in abstract reasoning. Overall, this study proved that the level of abstract reasoning of grade 12 students in Olivarez College Tagaytay were poor and needs improvement for better understanding. The researchers recommended having an entertaining logical test and activities such as problem solving, mathematical puzzles, and diagrams for the grade 12 students to improve their thinking and reasoning skills. It can help students for better understanding and they can solve and identify the pattern easily.

Keywords: *analytical thinking, abstract reasoning test, SHS students, next in series, matrices, and analogies, odd one out*

II. INTRODUCTION

Analytical thinking is the ability to know the details or explain a problem into smaller components and to understand the interrelationships among those components (Tian & Xiao, 2014). One of the many types of analytical thinking skills is abstract reasoning. Abstract reasoning involves flexible thinking, creativity, judgment, and logical, problem solving. It is the ability to analyze information, detect patterns and relationships and solve problems on a complex intangible level (Williams, 2015). Tests for abstract reasoning are somewhat similar to tests for inductive reasoning and diagrammatic reasoning. They try to test your lateral thinking and fluid intelligence in order to find the precision and speed at which the relationship between a set of shapes and patterns can be defined and interpreted.

In the world of education, reasoning abilities of the learners and its development was well-discussed. Accordingly, the higher the ability of the person to reason abstractly, the higher the chance that a person will effectively function in the society. Hence, it is the goal of the Enhanced Basic Education Curriculum or the K-12 Curriculum of the Department of Education, to improve the reasoning abilities and of formal reasoning among students at all levels of the basic education in the country. The higher the reasoning ability of a person, the more productive that person would be. The ability of logical reasoning has an essential function in the academic performance of students and their construction of concepts and knowledge.

Reasoning abilities are considered to be very important for students to use in recent society in learning and living. Research has shown that mathematical success requires a variety of general cognitive abilities. Reasoning ability enables students to apply what they learn in complex ways. Many professions need an individual with high logical skill and lateral intelligence to make abstract thinking tests reasonably common with employers.

In addition to the reasoning features that are required to solve the problem, one factor that makes abstract reasoning significantly difficult is the existence of distracting characteristics. In order to refute any false hypothesis before reaching the right one, learning other problem-solving operations will have to leverage different counter-evidence. Some other methods design an unsupervised mapping from high-dimensional feature space to a few explanatory factors of variation that are subsequently used by reasoning models to complete the abstract reasoning task (Steenbrugge & Leroux, 2018). However, students with cognitive learning disabilities and other disorders have weakness in abstract reasoning and can benefit from direct instruction in problem-solving skills. Demirel (2003), emphasized that logical reasoning abilities include effective use of concepts, giving scientific solutions to problems, detecting differences between concepts, generalizing, classifying, representing a problem with a mathematical formula, computing, simulating and providing a hypothesis testing.

This study is anchored to Bruner's Theory which states that students interact with the world by exploring and manipulating objects, wrestling with questions and controversies, or

performing experiments. It has been believed that it is best for the learners to discover facts and relationships by themselves. It is a constructivist theory that takes place in problem solving where the learner constantly develops new ideas or concepts based upon their existing knowledge. Proponents of this theory believe that discovery learning has many advantages. Skills such as analytical thinking and logical thinking skills help students keep an open mind in the face of conflicting ideas or opposing views and seek solutions that meet the standards of coherence and reasonableness. Skills and competencies which would enable them to live and work and develop their potentials, make critical and informed decisions.

The purpose of this research study is to determine the level of abstract reasoning skills of students in Olivarez College Tagaytay. Researchers conducted this study to measure how far a student can think analytically and critically. They aimed to know the ability of a student to analyze and understand the data information. The researchers select the grade 12 students to be the respondents. This study sought to answer the following questions:

1. What is the demographic profile in terms of:
 - 1.1. gender, and
 - 1.2. strand?
2. What is the level of abstract reasoning skills of the grade 12 students of Olivarez College Tagaytay?

III. METHODS

The researchers used quantitative descriptive research design that establishes only associations between variables by collecting quantifiable information to be used for statistical sampling of the population sample since this study was focused on knowing the level of abstract reasoning skills among grade 12 students. In order to gather necessary data, the researchers used sampling techniques in dividing the population into smaller subgroups based on shared attributes and characteristics from one another (Hayes, 2019). To determine the exact number of respondents, the researchers used Slovin's formula. The researchers used 95% of confidence level from the total numbers of 893 grade 12 students come up with 276 respondents the researchers used stratified random sampling technique and divide the number of respondents randomly from each strand 113 from HUMSS, 47 from STEM, 41 from ABM, 30 from TVL, 25 from ICT, 20 from GAS.

Before gathering the data, the researchers prepared an adapted examination from Charles Spearman. The Abstract Reasoning Test is designed according to classical test theory. It contains 25 items of progressive difficulty. It begins with a clear explanation, and the progressively increasing difficulty ensures that candidates of all IQ levels understand what they are supposed to do. It is also composed to measure an individual's ability to extract rules, discover analogies,

and work out new concepts with the different categories such as next in series, matrices and analogies, and odd one out. After preparing, the researchers asked the permission of the principal to conduct the examination. After receiving the approval, the researchers forwarded the access code to the respondents through messenger and administered the examination through Schoology.

Thereafter, the researchers used different statistical treatments such as frequency and percentage to determine and analyze the demographic profile of the respondents and the level of the abstract reasoning. For the purpose of arriving at a definite interpretation of the findings the researchers score and percentage for the scale.

Table 1*Next in Series*

Scale Ranges	Qualitative Description
0.00-3.67	Low
3.68-7.34	Average
7.35-11.00	High

Table 2*Odd one Out*

Scale Ranges	Qualitative Description
0.00-3.00	Low
3.01-6.00	Average
6.01-9.00	High

Table 3*Matrices and Analogies*

Scale Ranges	Qualitative Description
0.00-1.67	Low
1.68-3.34	Average
3.35-5.00	High

Table 4*Overall*

Scale Ranges	Qualitative Description
0.00-8.33	Low
8.34-16.66	Average
16.67-25.00	High

IV. RESULTS

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

1.1. gender, and

1.2. strand?

Table 5

Gender of the respondents

Gender	Frequency (f)	Percentage (%)
Male	102	36.95%
Female	174	63.40%
Total	274	100%

Table 1 shows the frequency of the gender of the respondents. 102 students or 36.95% of the respondents were male and 174 or 63.40% were female, with the total number of 276 respondents. It shows that the majority in grade 12 senior high school students of Olivarez College Tagaytay were females. It was found that women are better in abstract reasoning, though there are some men that are similar to each other but girls are more intelligent in reading and analyzing, according to Logan & Johnston (2010). In terms of abstract reasoning, many believe that girls are more efficient and cooperative than the boys based on their perspectives. This may show discrimination between the two genders. However, it is still viewed as a factor in many situations. This study has been investigated that showed the total differences of the capacity of skills when it comes to abstract reasoning between the girls and boys. This investigation has stated and given a little perspective that the boys are more determined and compassionate to outperform than girls. But it will always be based on a particular situation.

Table 6

Strand of the respondents

Section	Frequency (f)	Percentage (%)
HUMSS	113	40.94%
ABM	41	14.86%
STEM	47	17.02%
TVL	30	10.87%
ICT	25	9.06%
GAS	20	7.25%
Total	276	100%

Table 2 it shows the strands of Olivarez College Tagaytay , 40.94% of HUMSS students, 14.86% of ABM students, 17.02% of STEM students, 10.87% of TVL students , 9.06% of ICT students and 7.25% of GAS students with the total of 276 respondents took the test.

According to Bueno (2019), there was a greater tendency that students with high conditional knowledge about cognition may also be skillful in solving problems, more so with the information management of regulation of cognition. Thus, the students with higher metacognitive skills, may also have higher problem solving skills.

Problem 2. What is the level of abstract reasoning among grade 12 students in terms of next in series, matrices and analogies and odd one out?

Table 7

Level of Abstract Reasoning

Abstract Reasoning	Mean Score	Description
Next in Series	3.85	Average
Matrices and Analogies	1.81	Average
Odd one Out	2.66	Low
Overall	2.77	Low

Table 3 shows the level of abstract reasoning among grade 12 students in Olivarez College Tagaytay in terms of next in the series, matrices and analogies, and odd one out and description as well as their overall means score.

As seen in the table, in terms of next in series, the respondents achieved a mean score of 3.85 interpreted as average. This means that the students have adequate ability to understand and follow the pattern and the sequence and are not struggling.

Likewise, in terms of matrices and analogies, the respondents achieved a mean score of 1.81 interpreted as average. This means that students can complete the statement in differences of the pattern and are not struggling.

However, in terms of odd one out, the respondents achieved a mean score of 2.66 interpreted as low. This means that the students have poor skills when it comes to determining the particular pattern that forms a group or set. It is also implied that students are poor in reasoning and understanding the sequence of a pattern.

Hence, the respondents achieved an overall mean score of 2.77 in level of abstract reasoning which can be interpreted as low. This means that the students' level of abstract reasoning has to be improved.

According to White (2020), Charles Murray wrote a set of 3 articles on education that each addressed one range (low, average, and high). It was then noted that at and below IQ, 88 children

are able to learn word reading, but not concept reading. They can read a sentence and pronounce the words, but not understand material that is beyond a very simple level. As a general rule, low IQ people who are proficient in or inclined towards abstract thinking have low understanding concepts.

A previous research pointed out that many students used a very concrete strategy such as inputting data in the form of numbers already in the question (Susac et al., 2014). This situation led to a thought that students are struggling in using reasoning based on deduction (Darwish, 2014). Students in the bottom group have difficulty in abstract reasoning and subjects. Therefore, students could barely develop abstraction.

V. DISCUSSION

Overall, this study revealed that the majority of the grade 12 senior high school students of Olivarez College Tagaytay have a low level of abstract reasoning. They may not struggle with following the pattern and the sequence, but they could barely complete statements in differences of the pattern and determine the particular pattern that forms a group or set.

Many studies report difficulties with logical reasoning for different age groups (e.g. Toplak, 2016). Because of those difficulties, it is by no means certain that secondary school students are able to reason logically and thus develop their critical thinking abilities autonomously. Above all, logical reasoning tasks where several ways of reasoning are possible, are highly connected to the twenty-first century skills (P21, 2015), and thus with the development of critical thinking skills.

However, the data collected will not put an end to new discoveries to know the level of abstract reasoning students. Therefore, one of the key aspects for lessons in logical reasoning must be classroom discourse when solving reasoning tasks. Lakatos (1976) already stressed the importance of dialogue in the construction of mathematical and logical reasoning and more studies need to be done to verify other momentous information. The researchers recommend having some logical activities and tests for the grade 12 students to improve their thinking and reasoning skills. It can help students for better understanding and they can solve and identify the pattern easily.

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Extent of integration of Disaster Readiness and Risk Reduction curriculum and level of readiness of grade 12 STEM and GAS Students of Olivarez College Tagaytay S.Y. 2020-2021

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I. ABSTRACT

Since the Disaster Readiness and Risk Reduction (DRRR) curriculum has been introduced to the K-12 program, this signifies a new way to properly respond and educate students about disasters that could impose risks to Filipinos. For instance, here in the Philippines, people are exposed to different kinds of natural disasters such as typhoons, earthquakes, volcanic eruptions, and tsunamis (Commission on Audit, 2014). This study aimed to determine the extent of integration of DRRR curriculum and level of readiness of the grade 12 STEM and GAS students of Olivarez College Tagaytay. The researchers used descriptive correlational research design to describe and correlate the extent of integration of DRRR curriculum and level of readiness to disasters of a total of 245 Grade 12 Science, Technology, Engineering and Mathematics (STEM) and General Academic Strand (GAS) that were selected through stratified-sampling technique. The researchers used a Likert-type researcher-made and adopted questionnaire from Bacarezas (2020) in gathering the needed data, and utilized the different statistical treatments such as frequency and percentage for the demographic profile of the respondents while the weighted mean score in analyzing and interpreting the collected descriptive data from the questionnaire, then correlating the two variables with Pearson coefficient and testing its significance. The researchers found out that the selected students are ready for disasters and the DRRR curriculum is highly integrated. The study revealed that there is no significant relationship between the respondents' extent of integration of the DRRR curriculum and their level of readiness to disasters.

Keywords: *Disaster Readiness and Risk Reduction, senior high school students, Olivarez College Tagaytay*

II. INTRODUCTION

Since the Disaster Readiness and Risk Reduction (DRRR) curriculum has been introduced to the K-12 program, this signifies a new way to properly respond and be educated about disasters that could impose risks to Filipinos. The DRRR curriculum focuses on the application of scientific knowledge and the solution of practical problems in a physical environment and is designed to bridge the gap between theoretical science and daily living (Pineda, 2016; Department of Education, 2019). Moreover, the curriculum generally focuses on mitigating the risks in an upcoming, yet, unpredictable disaster. Disaster risk is expressed as the likelihood of loss of life, injury or destruction, and damage from a disaster in a given period (UDRR Global Assessment Report, 2015).

As the Philippines is one of the most disaster-prone countries in the world, the DRRR curriculum should be the priority for information dissemination. Certainly, the country is prone to multiple recurring hazards such as cyclones, floods, earthquakes, and landslides (Commission on Audit, 2014). As the Philippine archipelago is located in the Pacific Ring of Fire, the country has become prone to geological natural disasters such as volcanic eruptions and earthquakes (Blanco, 2015). A magnitude 7.2-magnitude earthquake of Bohol Province equivalent to “32 Hiroshima bombs” killed 222 people with 8 missing and 976 people injured (Andrade, 2013; National Disaster Risk Reduction and Management Council, 2013).

Recuenco and de Vera-Ruiz (2020) state that the government has recorded 39 deaths during the span of the evacuation and disaster response since the Taal Volcano erupted on January 12, 2020. Climate change is also an underlying factor that aggravates vulnerability to the population. It states that climate change can contribute to disasters where vulnerability and exposure exist (Forino et al., 2015). The risk and danger of disaster will worsen for the urban areas as more people and infrastructure will be involved in the unknown event. Similarly, Romero-Lankao and Dodman (2011) noticed that cities that concentrate population, economic activities, and built environments aggravated the risk in urban areas to climate change. These problems will be intensified with the country’s prominent poverty level, especially in urban areas. Informal settlements are usually characterized by highly vulnerable housing and a deficit of risk-reducing infrastructure such as drainage (Mitlin & Satterthwaite, 2013).

With this increasing phenomenon in the country, the DRRR has become a requirement in the K-12 curriculum. In an article from Miasco (2017), the DRRR curriculum has been integrated into the country in Section 14 of the Republic Act 10121 (or the Philippine Disaster Risk Reduction and Management Act of 2010) requiring DepEd, CHED, and TESDA to integrate the said curricula. DRRR assists students as well as their families in the different aspects of Disaster Risk Reduction (DRR). In the research from Galappatti and Richardson (2016, p. 226), activities such as risk assessment, planning, DRR and management systems, early warning systems, and drills enhance human capacity to hazard response and competence in the

disaster. Schools have essentially integrated preparedness competencies into the basic education science curriculum in most counties such as the Philippines (Cabilao-Valencia et al., 2018). The curriculum is now widely implemented not just in Olivarez College – Tagaytay but also at the national level and international levels. Currently, there is now increased international recognition of DRR integration into the curriculum, judged by the number of DRR policies, strategies, and frameworks that have been produced (Mutasa & Coetzee, 2019).

However, implementing and integrating the curriculum has certain challenges in mind. The challenge with teaching a subject like DRRR is its multidisciplinary nature, bringing together biological, geophysical, socio-cultural, political, and economic factors (Guest Post & DepEd Resources, n.d.). Most students are only aware of the DRRR but lacking practical implementations. Mamon et al. (2017) argued that most grade 11 students are aware of DRRR at the local, regional, and national level because of various disaster awareness campaigns, however, a high percentage of students are not aware of the importance of preparing emergency kits and bags in case of disaster. Even with the presence of the curricula, some studies show students' low DRRR performance. Mamon, Suba, and Son (2017) have found that students have very low disaster risk perception.

As revealed by Rogayan and Dollete (2020), the need for extensive dissemination of information about disasters for local communities is necessary so they become more aware of the causes and consequences of disasters. Also, such events occurred during the school year, students and teacher's ability to effectively gather knowledge prior to and following last year's Taal Volcano eruption and the COVID-19 pandemic has been affected dramatically. Nevertheless, the researchers hypothesized the extent of integration of DRRR curriculum affects the students' level of readiness to disasters, also, by essentially integrating the curriculum and being sufficiently ready in case a disaster struck. However, the research will only be conducted in one single institution, Olivarez College – Tagaytay. As with this, determining the level of readiness of the students is crucial for the future of the curriculum, especially.

This research sought to determine the extent of integration of the DRRR curriculum and the level of readiness of Grade 12 STEM and GAS students to future disasters. The study also aimed to correlate the integration of the curriculum to the level of readiness to disasters of the students. The students have studied the curriculum last year and certainly have previous experiences with significant events last year. Therefore, the researchers hypothesize the students to have a satisfactory and higher level of knowledge in DRRR as well as their preparedness in practical terms. The data collected from the questionnaires aim to serve as the basis for the future of the DRRR curriculum implementation. This study aimed to determine the extent of integration of the DRRR curriculum and the level of readiness of grade 12 STEM and GAS students of Olivarez College Tagaytay. Specifically, this research study sought to answer the following:

1. What is the demographic profile of the respondents in terms of:
 - 1.1. age,
 - 1.2. gender?
2. What is the extent of integration on the Disaster Readiness and Risk Reduction (DRRR) of grade 12 STEM and GAS students in Olivarez College - Tagaytay?
3. What is the level of readiness to disasters of Grade 12 STEM and GAS students in Olivarez College - Tagaytay?
4. Is there a significant relationship between integration of the DRRR curriculum and the level of readiness of Grade 12 STEM and GAS students in Olivarez College - Tagaytay?

III. METHODS

This study used the descriptive-correlational method of research. Descriptive research uses quantitative methods to describe what is, describing, recording, analyzing and interpreting conditions that exist (Khan, 2006). It is descriptive since it determines the integration of the DRRR and level of readiness to disasters among grade 12 STEM and GAS students of Olivarez College – Tagaytay. Correlational research describes the correlation method used to investigate the correlation between the variables (Arikunto, 2007).

For the data gathering, the researchers used stratified sampling technique in dividing the population into smaller subgroups based on shared attributes and characteristics from one another (Hayes, 2019). From a total population of 245 grade 12 Science, Technology, Engineering, and Mathematics (STEM) and General Academic Strand (GAS) students of Olivarez College Tagaytay who have their DRRR curriculum, the researchers used Slovin's formula to get the size of the sample to be used. It resulted in a total of 152 selected grade 12 STEM and GAS students. The STEM sections: Vega, Orion, Vela, and Virgo have 30 respondents each while the GAS section, Gemini have 32 respondents. The researchers used two separate questionnaires wherein the second questionnaire was adapted from Bacarezas (2020), with their research study titled "All or Nothing: Disaster risk reduction management subject implementation across senior high school strands among selected Grade 12 students in Olivarez College Tagaytay."

Furthermore, the researchers followed the following procedures in gathering the needed data for the study: First, the researchers asked their research advisers for the list of sections and students as well as their respective advisers for data gathering. Subsequently, the survey questionnaires underwent reliability testing and achieved 0.893 on Cronbach's Alpha and 0.898 on Cronbach's Alpha Based on Standardized Items with 30 items, deciding the survey

questionnaire with Good Reliability. Finally, the researchers asked the consent of the respondents. Upon getting their approval, they distributed survey questionnaires through Google Forms.

The data obtained from the research instrument used frequency distribution, percentage, and mean score. This was used for summarizing the two independent variables, the extent of integration and the level of readiness of students to disaster. The percentage was used to get the percentage of frequency distribution per category or data set. Mean was used to determine the verbal interpretation of the respondents in each statement. To arrive at the definite result, the mean score range was used.

For the quantitative correlational part of the research, the data obtained from two independent variables: the extent of integration and the level of readiness of students to disaster, was correlated using Pearson Correlation Coefficient. The coefficient was used for determining the level of correlation between the two variables. To find the significance of the relationship between the two variables and to answer the research hypothesis, a two-tailed T-Test was used. The P-Value with the set significance level of 5% ($\alpha = 0.05$) obtained from the T-Test was used as a reference to decide whether to accept or reject the set null hypothesis, as well as the alternative hypothesis.

Table 1

Extent of Integration

Range	Qualitative Description
3.26 - 4.00	Very High Extent
2.51 - 3.25	High Extent
1.76 - 2.50	Moderate Extent
1.00 - 1.75	Low Extent

For the extent of integration of DRRR curriculum, the researchers hypothesized the following:

Ho: $\mu \leq 2.50$ - The integration of the DRRR curriculum is not significant for students.

Ha: $\mu > 2.50$ - The integration of the DRRR curriculum is significant for students.

Table 2*Level of Readiness*

Range	Qualitative Description
3.26 - 4.00	Very Ready
2.51 - 3.25	Ready
1.76 - 2.50	Not So Ready
1.00 - 1.75	Not Ready

For level of readiness of the students, the researchers hypothesized the following:

Ho: $\mu \leq 2.50$ - The level of readiness of students is insufficient.

Ha: $\mu > 2.50$ - The level of readiness of students is sufficient.

For the quantitative correlational part of the research, Pearson correlation coefficient with T-statistic was used in correlating the relationship between DRRR curriculum to the students' level of readiness to disasters. The researchers used Pearson correlation coefficient and strength of relationships to indicate the extent of correlation between the variables. Strength of relationships was used to determine the verbal interpretation of the correlation between the variables.

Table 3*Relationship between DRRR curriculum to the students' level of readiness to disasters*

Pearson Correlation Coefficient	Qualitative Description (Strength of Relationships)
0.00	No correlation, no relationship
± 0.01 to ± 0.20	Very low correlation, almost negligible relationship
± 0.21 to ± 0.40	Slight correlation definite but small relationship
± 0.41 to ± 0.70	Moderate correlation, substantial relationship
± 0.71 to ± 0.90	High correlation, marked relationship
± 0.91 to ± 0.99	Very high correlation, very dependable relationship
± 1.00	Perfect correlation, perfect relationship

For the proving of the hypothesis, the researchers used P-Value to determine the significance of the correlation. The researchers used the T-Statistic to prove or disprove research

hypotheses. Afterward, the researchers used the value from the Pearson correlation coefficient and its degree of freedom. Afterward, the researchers used the P-Value of T-Statistic with $\alpha = 0.05$ (5% significance).

For the significance of the relationship of the extent of integration of DRRR curriculum to the level of readiness of the students, we hypothesized the following:

Ho: $\alpha \geq 0.05$ - The DRRR curriculum has no relationship to the students' level of readiness to disasters.

Ha: $\alpha < 0.05$ - The DRRR curriculum has a significant relationship to the students' level of readiness to disasters.

IV. RESULTS

Problem no. 1: What is the demographic profile of the respondents in terms of:

1.1. age, and

1.2. gender?

Table 4

Age of respondents

Age	Frequency (F)	Percentage (%)
17	52	34.21%
18	83	54.61%
19	12	7.89%
20	5	3.29%
Total	152	100%

Table 4 depicts that 52 or 34.21% are 17 years old. Second, 83 or 54.61% are 18 years old. Third, 12 or 7.89% are 19 years old. Fourth, 5 or 3.29% are 20 years old. This shows that the majority of the respondents were eighteen (18) years old. This suggests that the majority of the grade 12 STEM and GAS students belong to a regular age group of senior high school students. According to Roach (2021), the senior high school consists of two years of specialized upper secondary education, wherein Grades 11 and 12 age ranges from sixteen (16) to eighteen (18).

Table 5*Gender of respondents*

Gender	Frequency (F)	Percentage (%)
Male	85	55.92%
Female	67	44.08%
Total	152	100%

Table 5 reveals that the majority of the respondents, which are grade 12 STEM and GAS students, were male with a frequency of 85 and is equivalent to 55.92% of the respondents. Moreover, the female has a frequency of 67 that is equivalent to 44.08% of the respondents. In relation, the findings of Cvetković et al. (2015) date support the idea that gender roles within the household and community may have direct implications for the successful prevention, mitigation, and management of hazard situations.

Problem no. 2: What is the extent of integration of the Disaster Readiness and Risk Reduction (DRRR) and level of readiness to disasters of grade 12 STEM and GAS students in Olivarez College - Tagaytay?

Table 6

Extent of integration of the Disaster Readiness and Risk Reduction (DRRR) of Grade 12 STEM and GAS students in Olivarez College - Tagaytay

Indicators	Mean Score	Verbal Interpretation
1. I can relate the concept of disaster with daily life.	3.2	High Extent
2. I can conduct hazard hunts of exposed elements and propose corresponding corrective actions for one's preparedness.	2.96	High Extent
3. I can relate various types of hazards with a specific area for one's preparedness.	3.17	High Extent
4. I can develop a family emergency preparedness plan to guide them on what to do before, during, and after an earthquake.	3.24	High Extent
5. I can develop a family emergency preparedness plan to guide them on what to do before, during, and after a volcanic eruption.	3.26	Very High Extent

6.	I can develop a family emergency preparedness plan to guide them on what to do before, during, and after the occurrence of events that cause geological hazards.	3.12	High Extent
7.	I can develop a family emergency preparedness plan to guide them on what to do before, during, and after the occurrence of events that cause hydro-meteorological hazards.	2.95	High Extent
8.	I can develop proficiency in executing emergency response plans through safety drills.	3.19	High Extent
9.	I can develop a family emergency preparedness plan to guide them on what to do before, during, and after a fire incident.	3.19	High Extent
10.	I am able to develop a community emergency preparedness plan and community disaster preparedness plan to minimize vulnerability and disaster risk in the community and avoid or limit adverse impacts of hazards.	2.86	High Extent
Total		3.11	High Extent

Table 6 shows that the grade 12 STEM and GAS students of Olivarez College Tagaytay achieved a total mean score of 3.11, and the results confirmed that the extent of integration of the disaster readiness and risk reduction (DRRR) have high extent.

Whereas, students have a high extent of integration of DRRR, having sufficient knowledge about learning competencies of the curriculum. Superior results are seen for statement number five (5), “I can develop a family emergency preparedness plan to guide them on what to do before, during, and after a volcanic eruption,” which had the highest rating among ten items which achieved a mean score of 3.26 that has a verbal interpretation of “Very High Extent.” Subsequently, with the eruption of Taal Volcano in January 2020, the recent occurrence may have enhanced the perception and preparation of Grade 12 STEM and GAS students as they are living near the volcano as it happened.

On the other hand, the tenth (10) statement, “I am able to develop a community emergency preparedness plan and community disaster preparedness plan to minimize vulnerability and disaster risk in the community and avoid or limit adverse impacts of hazards.” obtained the lowest mean score of 2.86, but still has a positive verbal interpretation equivalent to

“High Extent.” Subsequently, the selected students also recognized the importance of having preparedness plans in case of unexpected impending disasters.

Based on the findings, it is clear that there is a high extent of integration of Disaster Readiness and Risk Reduction among the students of grade 12 STEM and GAS of Olivarez College Tagaytay. In response to this, with the proposed topics for integration, Rogayan and Dollete (2020) hoped that the students will become more aware and more conscious about disasters and may increase their degree of preparedness.

Problem no. 3: What is the level of readiness to disasters of Grade 12 STEM and GAS students in Olivarez College - Tagaytay?

Table 7

Level of readiness to disasters of Grade 12 STEM and GAS students in Olivarez College – Tagaytay.

	Indicators	Mean Score	Verbal Interpretation
1.	I know when a disaster will happen.	2.4	Not so Ready
2.	I know there is no prevention for the occurrence of disaster.	2.51	Ready
3.	I have participated in disaster risk education, seminars and training.	2.88	Ready
4.	I know the significance of sharing knowledge and experience of disaster.	3.24	Ready
5.	I recognize the importance of making conversation about disasters with family members, neighbors, relatives, friends and colleagues.	3.26	Very Ready
6.	I know the government is ready to provide assistance after the disaster.	2.83	Ready
7.	I am confident that reconstruction activities can be implemented after a disaster.	2.86	Ready
8.	I gain enough knowledge about disasters from experts who work or conduct activities for disaster reduction and management.	2.96	Ready
9.	I am aware of the shelter areas, evacuation centers and open spaces in case of disaster.	2.95	Ready

10.	I am aware about which government institutions need to be coordinated and contracted with disasters.	2.95	Ready
11.	I am informed about disaster prone areas.	3.01	Ready
12.	I obtain sufficient information about disaster adaptation from the local government or from NGOs.	2.79	Ready
13.	I am fully aware and informed about the evacuation system and plan in my locality, or area.	2.85	Ready
14.	I actively participate in disaster awareness campaigns.	2.69	Ready
15.	I am prepared with emergency kits and bags in case of disaster.	2.9	Ready
16.	I prioritize awareness at the local, regional and national level.	2.94	Ready
17.	I am aware of the importance of building or infrastructure retrofitting.	2.99	Ready
18.	I am sure that large-scale earthquakes will definitely happen in the next 10 years.	2.45	Not so Ready
19.	I think my locality is safe from disaster.	2.55	Ready
20.	I think my house/building is well designed to withstand an earthquake.	2.68	Ready
Total		2.83	Ready

Table 7 shows that the grade 12 STEM and GAS students of Olivarez College Tagaytay achieved a total mean score of 2.83 which is verbally interpreted as “Ready.”

Furthermore, the overall statement shows that the selected students are ready for impending unexpected disasters that can happen at any moment. Specifically, statement number five (5), “I recognize the importance of making conversation about disasters with family members, neighbors, relatives, friends and colleagues.” has the highest rating among twenty (20) items which gathered a mean score of 3.26 with the verbal interpretation of “Very Ready.” Moreover, this statement shows that the selected students recognize the importance of sharing knowledge of the impact and effects of impending unexpected disasters. Whereas, statement number one (1), “I know when a disaster will happen,” had the lowest mean score of 2.4, with the verbal interpretation of “Not So Ready.”

In connection to this, students are not prepared for any impending disasters that can happen at any moment, especially, here in the Philippines, which is one of the most disaster-prone countries in the world. Also, the students are not sure about when a disaster will happen in the next 10 years, which is connected to their response to knowing when a disaster will happen. As the IFRC (n.d.) described a disaster, as a sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community's or society's ability to cope using its resources.

The results demonstrate that grade 12 STEM and GAS students in Olivarez College – Tagaytay are sufficiently ready if a disaster happens. Indeed, by being ready for disasters, students can reduce some of the physical, emotional and psychological risks (Mohammad, 2019).

Problem no. 4: Is there a significant relationship between integration of the DRRR curriculum and the level of readiness of Grade 12 STEM and GAS students in Olivarez College - Tagaytay?

Table 8

Correlation between the respondents' extent of integration of the DRRR curriculum and their level of readiness to disasters.

Pearson Correlation	rho	Verbal Interpretation	P-value $\alpha = .05$	Decision	Remarks
Correlation between the respondents' extent of integration of the DRRR curriculum and their level of readiness to disasters.	0.116	Very low correlation, almost negligible relationship.	0.155	Accept Ho.	The DRRR curriculum has no significant relationship to the students' level of readiness to disasters.

In this result, the Pearson correlation between the respondents' extent of integration of the DRRR curriculum and their level of readiness to disasters is 0.116, which indicates that there is a positive relationship between the variables and implies a very low correlation, almost negligible relationship.

The P-value in the correlation between the respondents' extent of integration of the DRRR curriculum and their level of readiness to disasters is higher than the significance level (α) of .05. Therefore, accepting the null hypothesis, indicating that the DRRR curriculum shows no significant relationship to the student's level of readiness to disasters.

Contrary to the research speculation, this analysis found evidence that Grade 12 STEM and GAS student's extent of integration of the DRRR curriculum has no effect on their level of readiness.

While both areas have sufficient ratings in terms of the extent of integration and level of readiness, this analysis found that grade 12 STEM and GAS student's extent of integration of the DRRR curriculum does not affect their level of readiness to disasters or vice versa. The lack of significance to each other suggests that good education alone is not enough to be fully prepared for disasters. Concerning this, Rogayan and Dollete (2020) stated that lived experiences taught residents of the barrio community in Zambales to be prepared and equipped for possible disasters that might occur. Moreover, real-life experiences teach a person more about disaster readiness.

V. DISCUSSION

Overall, the findings show that the extent of integration of disaster readiness and risk reduction (DRRR) is, therefore, regarded as "High Extent". The students have sufficient knowledge about learning competencies of the curriculum. In response to this, with the proposed topics for integration, Rogayan and Dollete (2020) hoped that the students will become more aware and more conscious about disasters and may increase their degree of preparedness. Consequently, based on the results, students excel to develop a family emergency preparedness plan to guide them on what to do before, during, and after a volcanic eruption. Subsequently, the selected students also recognized the importance of having preparedness plans in case of unexpected impending disasters.

On the other hand, the researchers concluded that grade 12 STEM and GAS students are also ready for any impending disasters that can happen at any moment. In particular, the results state that the students are open to discuss disasters with their family members, neighbors, relatives, friends, and colleagues, increasing awareness and readiness as well. Indeed, by being ready for disasters, students can reduce some of the physical, emotional, and psychological risks (Mohammad, 2019). Moreover, this statement shows that the selected students recognize the importance of sharing knowledge of the impact and effects of impending unexpected disasters. On the other hand, students are not prepared for any impending disasters that can happen at any moment, especially, here in the Philippines, which is one of the most disaster-prone countries in the world. Also, the students are not sure about when a disaster will happen in the next 10 years, which is connected to their response to knowing when a disaster will happen.

More importantly, this study proves that the integration of disaster readiness and risk reduction (DRRR) and the level of readiness to disasters in Olivarez College Tagaytay makes the students' idea on how to integrate and be ready for any impending disasters that can happen at any moment. Whereas, this study reveals that there is no significant relationship between the

respondents' extent of integration of disaster readiness and risk reduction (DRRR) and their level of readiness to disasters. While both areas have sufficient ratings in terms of the extent of integration and level of readiness, the lack of significance to each other suggests that good education alone is not enough to be fully prepared for disasters. Concerning this, Rogayan and Dollete (2020) stated that lived experiences taught residents of the barrio community in Zambales to be prepared and equipped for possible disasters that might occur. Moreover, real-life experiences teach a person more about disaster readiness.

However, the study is limited to determine the extent of integration of the DRRR and level of readiness to disasters among grade 12 STEM and GAS students of Olivarez College – Tagaytay as only STEM and GAS students have a DRRR curriculum. Such events occurred, affecting students and teachers' ability to effectively gather and present knowledge before and following last year's Taal Volcano eruption and the COVID-19 pandemic.

In conclusion, it would appear that the grade 12 STEM and GAS students of Olivarez College - Tagaytay have essentially integrated the DRRR curriculum and are ready for any impending disasters that can happen at any moment despite having no significant relationship between the two. However, this aspect of the research strongly suggests that practical activities such as having disaster drills and evacuation plans help the students further prepare if a sudden unexpected disaster occurs at any moment as well as strengthening the curriculum itself. Also, creating community disaster preparedness seminars, emergency plans, and community disaster preparedness plans minimize vulnerability and disaster risk in the community and avoid or limit adverse impacts of hazards, helping not just the students in the institution, but also the community that surrounds it. As revealed by Rogayan and Dollete (2020), the need for extensive dissemination of information about disasters for local communities is necessary so they become more aware of the causes and consequences of disasters. Moreover, the broadening of this curriculum on all of the strands in Senior High School would help the majority of the students to be ready and to integrate the disaster readiness and risk reduction (DRRR) curriculum. Lastly, in future studies, expanding the research respondents may be essential in working for the significance of the variables aforementioned.

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Determining the level of financial literacy among grade 12 Accountancy, Business and Management students in Olivarez College Tagaytay S.Y. 2020-2021

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I. ABSTRACT

Financial literacy is both an important life skill and critical intellectual competency and it is an essential component to every individual. It is not mandatory to be a professional to be financially literate, but one needs to be a person who can maximize present money to gain financial stability. This study aimed to determine the level of financial literacy among grade 12 Accountancy, Business and Management students of Olivarez College Tagaytay. The researchers used quantitative-descriptive research design to describe the level of financial literacy of 135 grade 12 Accountancy, Business and Management students that were selected with the use of universal sampling where every member of the population has an equal chance of being selected and the sampling frame should include the whole population. The researchers used an adapted questionnaire from Binobo et al. (2019) in gathering the needed data, and utilized different statistical treatment such as frequency and percentage for the demographic profile of the respondents, while weighted mean score in analyzing and interpreting the collected data from the survey questionnaire. The research revealed that the students were verbally interpreted literate in terms of obtaining their financial knowledge and were highly literate in terms of budgeting. This study proved that grade 12 Accountancy, Business and Management students in Olivarez College Tagaytay have the ability and confidence to use one's own financial knowledge to make financial decisions but still need improvement to be highly literate in using money, such as making a budget, saving money and controlling spending. Thus, the researchers recommended that students should have goal savings at the end of each week or month to be able to practice financial management. They are also recommended to keep up with economic news like exchange rates, taxes, and inflation rates that may affect their daily budgeting in order to enhance their financial knowledge.

Keywords: *financial literacy, financial decisions, ABM students, Olivarez College Tagaytay*

II. INTRODUCTION

Learning financial literacy is a promising way to improve financial capacity for today's young people (Duquette, 2018). Defining and appropriately measuring financial literacy is essential to understand educational impact as well as barriers to effective financial choice. Financial literacy is the ability and confidence to use one's own financial knowledge to make financial decisions (Huston, 2010). An individual who is highly equipped with financial literacy tends to be effective in using money, such as making a budget, saving money and controlling spending.

In line with this, being financial literate can be of great help to equip us with the knowledge and skills when managing money effectively. Financial literacy is important for high school students as they transition into an ever-changing economy. High school students, who are financially literate, are likely to develop positive financial behaviors and make positive financial decisions (Nguyen, 2013). Over the years, this topic re-emerged as complex issues in our society, especially among ABM students that needed knowledge about effective decisions with all their financial resources.

The need for financial literacy becomes inevitable as for the Philippine economy, prices of commodities become higher, and money has gained more value today. Previous studies state that the inadequate personal finance among Senior High School students then has undesirable effects on students' decision making. Promoting financial literacy among students is very important as they shift into an ever changing economy. The study on financial literacy has continued to gain attention in the field of education and beyond, in today's society financial knowledge has become an instrument in ensuring a financially healthy society (Odek, 2015).

This study is anchored on goal setting theory of motivation which states that motivational variables significantly improve the financial literacy skills, further, it is explained that the motivations are able to change the behavior of individuals in managing finances and ultimately improve the financial literacy (well-literate). Goal setting theory of motivation in this case the construct of goal commitment and goal specificity (financial planning) can predict the individual's level of financial literacy. Accordingly, goal setting has a very big influence on the performance of the individual in planning financial targets. This planning process can help individuals to control their financial condition. Goal setting theory is a form of motivation theory which emphasizes the importance of the relationship between the goals set and the resulting performance. Context of this statement, the motivational theory approach that is used to design the financial literacy strategies and concepts is goal setting theory of motivation.

This study sought to determine the level of financial literacy of grade 12 Accountancy, Business and Management students of Olivarez College Tagaytay. The evidence collected from previous studies demonstrates that less knowledgeable students tend to hold wrong opinions and

make incorrect decisions. Furthermore, the low level of financial literacy will limit student's ability to make informed decisions. This implies that students must be equipped with financial literacy in order to achieve and make a wise decision. Review outline revealed that financial literacy among students is needed to curb any future problems that may arise due to lack of knowledge of financial literacy.

Therefore, financial literacy must be given the needed attention as students would be facing the realities of economic hardships after school. Patterns observed in student responses were used to determine current and additional data regarding the level of financial literacy of ABM students. Specifically, this study sought to answer the following questions:

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

1.1. age, and

1.2. gender?

2. What is the level of financial literacy of Grade 12 ABM students in Olivarez College Tagaytay?

III. METHODS

Since this study was focused on determining the level of financial literacy among the Grade 12 Accountancy, Business and Management students, the researchers used quantitative descriptive research design that allows them to describe the nature that occurs within the demographic segment towards a phenomenon using an observational method (Bhat, n.d.).

In order to gather the necessary data, the researchers used universal sampling where every member of the population has an equal chance of being selected and the sampling frame should include the whole population. From the total population of 144 Grade 12 Accountancy, Business and Management students of Olivarez College Tagaytay S.Y 2020-2021, the researchers used universal sampling to get the size of the sample to be used that resulted to a total of 135 grade 12 ABM students excluding the researchers to participate in the study.

The researchers used an adapted questionnaire from Binobo et al. (2019) in gathering the data from the respondents of the sections mentioned. Before gathering data, the researchers prepared the survey questionnaires and requested for the permission of the school administrator on the schedule of the data gathering, then the researchers distributed and retrieved the survey questionnaires from the respondents by virtual means and then tabulated it.

After that, the researchers used different statistical treatments such as percentage and frequency that were used to determine and analyze the demographic profile of the respondents

while the mean score was used to interpret the response of the participants on the survey questionnaire. For the purpose of arriving at a definite interpretation of the findings, the researchers score and mean ranges for the scale.

Scale Ranges	Qualitative Description
3.26 – 4.00	Highly Literate
2.51 – 3.25	Literate
1.76 – 2.50	Somehow 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, and

1.2. gender?

Table 1

Age of the respondents

Age	Frequency (f)	Percentage (%)
16	4	2.96
17	78	57.78
18	49	36.30
19	2	1.48
20	2	1.48
Total	135	100%

Table 1 shows the frequency and percentage of the age of the respondents. First, 4 students or 2.96% of the respondents were 16 years old. Then, 78 or 57.78% of the respondents were 17 years old. Third, 49 or 36.30% of the respondents were 18 years old. Fourth, 2 or 1.48% of the respondents were 19 years old. Lastly, 2 or 1.48% of the respondents were 20 years old, with the total number of 135 respondents. The result shows that the majority of ABM students were 17 years old.

Prior to this, a research conducted by Nguyen (2013) states that high school students lack the financial knowledge to make important financial decisions. Therefore, an understanding of financial concepts needs to be given as early as possible because financial habits will continue to be carried and built by children to their adulthood.

Table 2*Gender of the respondents*

Gender	Frequency (f)	Percentage (%)
Female	107	79.26
Male	28	20.74
Total	135	100%

Table 2 shows the frequency and percentage distribution of the respondents in terms of gender. In a total of 135 respondents, the majority of them were female with a frequency of one-hundred seven (107) and a percentage of 79.26%, while the male respondents were twenty-eight (28) and a percentage of 20.74%. Data states that ABM has a greater quantity of female students.

Problem 2. What is the level of financial literacy of grade 12 ABM students in Olivarez College Tagaytay?

Table 3*Level of financial literacy of the respondents*

Indicators	Weighted Mean	Verbal Interpretation
1. I am aware of the exchange rate of peso.	3.07	Literate
2. I am aware of the inflation rate in the Philippines.	2.99	Literate
3. I am able to determine what should be prioritized before and during buying an item/s.	3.36	Highly Literate
4. I am able to allocate my budget to match with my spending.	3.27	Highly Literate
5. I keep receipts and bills to be conscious of my spending.	2.98	Literate
6. I feel confident in my knowledge and ability to manage my own finances.	3.05	Literate
7. I read and understand contract/s especially involving money before signing.	3.24	Literate
8. I learn financial management and obtain financial knowledge through my parents.	3.10	Literate
9. I obtain financial knowledge and learn financial management on my own.	3.01	Literate

10. I consider myself to be financially literate (able to maximize the present money in order to gain financial stability).	3.10	Literate
Total	3.12	Literate

Table 3 revealed that grade 12 Accountancy, Business and Management students of Olivarez College Tagaytay achieved a total mean score of 3.12 and which was interpreted as literate in the level of financial literacy.

In particular, “Determining what should be prioritized before buying.” got the highest computed weighted mean of 3.36 which were verbally interpreted as highly literate. In line with this, according to the research of Hank, it is important to prioritize and organize budget to make sure that you have a disciplined way of saving and spending money. However, statement number five (5) “Keeping receipts and bills to be conscious of their spending” got the lowest computed weighted mean of 2.98 which was verbally interpreted as literate. It implies that they have the ability and confidence to use one’s own financial knowledge to make financial decisions but still need improvement to be highly literate in using money, such as making a budget, saving money and controlling spending.

This coincides to Ajide (2015) as they revealed in their study that when it comes to students, money management is very unfamiliar. Financial knowledge would be difficult to achieve and maintain for youths and others in society. The result of this study is relevant because according to Huston (2010) it is important that students must learn how to handle money and apply such knowledge and understanding in order to make effective decisions to improve the financial well-being of individuals and society, and to enable participation in economic life.

V. DISCUSSION

This study aimed to determine the financial literacy of grade 12 Accountancy, Business and Management students in Olivarez College Tagaytay. The researchers concluded that grade 12 Accountancy, Business and Management students were highly literate in terms of determining what should be prioritized before and during buying an item. It resulted in the highest mean score of 3.36. It is linked with Baker (2016) who explained that having a positive evaluation of oneself may also be essential for individuals to initiate and persist with the daunting process of financial management. With this thought in mind, it implies that a good financial literacy is necessary for every individual to manage his/her finances to achieve prosperity. To have a good level of financial literacy, individuals need to have a smart financial behavior to make them have the skills and confidence in using knowledge to be able to identify financial products and

services. Changes in behavior can be achieved through a process that starts from early habituation.

Therefore, an understanding of financial concepts needs to be given as early as possible because financial habits will continue to be carried and built by children to their adulthood. Additionally, financial literacy is both an important life skill and a critical intellectual competency and an essential component of a college degree (Kezar & Yang, 2015). That is, it is not mandatory to be a professional to be financially literate, but one needs to be a person who can maximize present money to gain financial stability. It is necessary that students must learn how to handle money as they are expected to earn at a later stage in their lives.

On the other hand, keeping receipts and bills to be conscious of my spending in the survey instrument was found to have the lowest weighted mean among the ten statements that achieved a mean score of 2.98 but still regarded as literate. This study supports Huston (2010) who stated that defining and appropriately measuring financial literacy is essential to understand educational impact as well as barriers to effective financial choice. Generally grade 12 Accountancy, business and Management students of Olivarez College Tagaytay achieved a total mean score of 3.12 which is considered as literate on using one's own financial knowledge to make financial decisions. This relates to the previous study conducted by Binobo et. al (2019) that revealed high school students have adequate financial literacy but needs improvement to be considered as highly financially literate students.

However, it should be noted that this study has only examined financial literacy among grade 12 Accountancy, Business and Management students since their strand have the financial and business related subjects. Even though students in every strand also make financial choices and decisions, the research is focused only on the level of financial literacy of grade 12 Accountancy, Business, and Management students in Olivarez College Tagaytay.

In general, this study proved that the level of financial literacy of grade 12 Accountancy, Business, and Management students in Olivarez College Tagaytay for the school year 2020-2021 are considered literate based on the data collected and tabulated. However, the data gathered will not put an end to new discoveries on how financially literate Accountancy, Business and Management students in Olivarez College Tagaytay are.

As for the future researchers, this study could also be extended to other parts of the institution so as to assess the level of financial literacy among senior high students from different perspective like when the participants will be grouped according to sex, grade level, district, and estimated family income and if there will be a significant difference in the level of financial literacy when grouped according to sex, grade level, district, and estimated family monthly income. Therefore, more in depth studies could also be done to ascertain other significant information. Students must have the willingness to learn on managing their finances as it can

affect their futures significantly. Students are suggested to practice proper budgeting of their money and be mindful of their spending. The researchers recommended that students should also have goal savings at the end of each week or month to be able to practice financial management. Furthermore, they are also recommended to keep up with economic news like exchange rates, taxes, and inflation rates that may affect their daily budgeting in order to enhance their financial knowledge.

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The Impact of COVID-19 pandemic on the mothers' buying behavior of grade 12 Accountancy, Business and Management Students at Olivarez College Tagaytay

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I. ABSTRACT

Consumer buying behavior is the overall attitudes, preferences, intentions, and decisions of the consumers when purchasing a product or service (Grimsley, 2015). This study explored the impact of CoViD-19 pandemic on the buying behavior of consumers in terms of personal, psychological, social, economic and cultural. This study has been motivated by the realization that there are few local studies about the impact of pandemic on the consumer buying behavior. Thus, it is imperative that the questions that the researchers wanted to have answers should be identified and addressed. Data were collected through a validated 25-item web-survey using Google Forms. The researchers selected grade 12 ABM students' mothers as respondents to observe and showcase the impact of the CoViD-19 pandemic on their buying behavior as consumers. The researchers used the Stratified Sampling Technique that acquired 108 respondents that had been derived using the Slovin's formula. Since there were 3 sections for the grade 12 ABM strand, each section had 36 respondents that participated in the study. This study showed that CoViD-19 has a great impact on the buying behavior of consumers in terms of personal, psychological, social, economic and cultural aspects. Results show that the consumer buying behavior in terms of economic aspect has been the most impactful while the psychological aspect has been least impactful. Thus, the respondents' buying behavior was mainly influenced by many economical factors. The researchers recommended the mothers to control their allocated budget and maximize the usefulness of their financial resources.

Keywords: *consumers, buying behavior, pandemic, personal, psychological, social, economical, cultural, mothers, contemporary, budget*

II. INTRODUCTION

Presently, COVID-19 pandemic has a major impact on consumers' buying behavior. There has been wide interest in studying the impacts of it on the behavior of consumers. Consumer behavior is the overall attitudes, preferences, intentions, and decisions of the consumers when purchasing a product or service. It is the act of the consumer when buying different necessities like goods or services. Furthermore, Mehta et al. (2020) stated that a critical situation can affect human behaviors differently. For instance, changes in consumer behavior depend on a particular situation, specifically the current crisis which is the COVID-19 pandemic. Additionally, Tucker (2020) said that buying decisions vary from the new living situation of consumers experiencing. Thus, consumer behavior can be changed if the current situation has changed.

Moreover, COVID-19 pandemic has affected everyone's daily life and is slowing down the global economy. It has rapidly affected the daily lives of people, businesses, disrupted world trade, and everybody's movements (Haleem et al., 2020). As a result, consumers are adapting their behavior to the new normal as the countries affected by the pandemic are trying to rebuild their economies (Arora et al., 2020). Consumers are buying different goods and services and it affects the economy of a country. Since consuming behavior has changed, the economy of a country has also changed. Sheth (2020) said that consumers are learning improvisation and habits in consuming. For example, buying goods through online shopping has increased since there are still restrictions on going outside. This shows that COVID-19 pandemic has a definite effect on the financial, social and even mental behavior of the consumers and it is continuously transforming.

Furthermore, Wells (2020) stated that analyzing the effects of sudden transformation on the economy, supply chains, and the environment is important because these behaviors will be adapted even if the pandemic is over. The investigation of consumers' buying behavior draws upon the personal, psychological, social, economic, and cultural factors (Ramya & Mohamed Ali, 2016). Studying consumer buying behavior is significant in understanding how individuals make decisions on purchasing goods and services through their accessible resources like time, money, and effort. It reflects the decision of an ordinary purchaser when consuming various goods and services (Tutorialspoint, 2020).

This study is based on a model of consumer behavior called stimulus-response or the "Black Box" model. The stimulus-response model indicates the two stimuli; the internal and external stimuli that are transformed into responses (Sandhusen, 2000). The external stimuli that the consumers are responding to have something to do with environmental factors. The environmental factors consist of different circumstances of the society such as economic, political, and cultural. These factors are external circumstances that are helping consumers shape

their choices (Madhavan & Chandrasekar, 2015). Whereas, the internal factors affecting consumer buying behavior are described as the “black box.” The “box” contains the different factors inside a person’s mind. It includes the characteristics of the consumer, such as beliefs, values, motivation, lifestyle, etc. As the consumers respond to these external stimuli, their “black box” processes their behavior and determines their response whether to buy or not to buy (Claessens, 2015).

However, the abovementioned studies are extensively conducted in foreign countries and very few researches were conducted in the Philippines. That is, there has been limited research about consumers buying behavior. The related literature used is only applicable in some aspects and there is remaining unclear information.

Hence, the purpose of this study is to know the impact of COVID-19 pandemic on the buying behavior of consumers in terms of personal, psychological, social, economic and cultural aspects. The researchers specifically chose Grade 12 ABM students’ mothers as respondents to observe and showcase the impact of the COVID-19 pandemic on their buying behavior as consumers. The respondents are limited to Grade 12 ABM students since they have a broader understanding about financing and accounting related subjects and information than Grade 11 ABM students. In addition, ABM students are more likely to affect their mother’s buying behavior since they have better experience in understanding the topics relating to business finance, economics and marketing. (Santos, 2016) Overall, it aims to fulfill the gap of producing a local study about the impact of COVID-19 pandemic on the consumer buying behavior. Specifically, this paper aims to answer the following questions:

1. What is the demographic profile of the respondents in terms of:
 - 1.1.age,
 - 1.2.family size, and
 - 1.3.budget?
2. What are the impacts of the pandemic on the buying behavior of mothers of Grade 12 students in terms of:
 - 2.1. economical aspect,
 - 2.2. cultural aspect,
 - 2.3. personal aspect,
 - 2.4. psychological aspect, and
 - 2.5. social aspect?

III. METHODS

The researchers used a quantitative descriptive study as a research design to know the impact of CoViD-19 pandemic on the consumer buying behavior of mothers of grade 12 students in Olivarez College Tagaytay. With the use of this research design, the consumer buying behavior of Mothers in terms of social, personal, cultural, psychological and economical factors will be determined through collecting and gathering data.

In order to gather the necessary data, the researchers used stratified sampling technique to divide the population into dividing the entire population into homogeneous groups called strata or smaller subgroups (Hayes, 2019). From a total population of 147 Grade 12 students under Accountancy, Business and Management strand at Olivarez College Tagaytay, the researchers used Slovin's formula to get the size of the sample that will result in a total of 108 selected respondents that participated in the study. The researchers got 36 respondents for each section.

In collecting the data from the chosen respondent of each strand, the researchers used an adapted but modified questionnaire from a business student in University of Birmingham. The researchers prepared the survey questionnaires that were subject to validity and reliability tests before collecting data. After the school administrator's approval and permission to start data collection, the researchers distributed the survey questionnaires and retrieved their answers. The participants of the study have let their mothers answer the survey that was given to them through private messages. The researchers performed the web-survey using Google Forms. The researchers were aware of different ethical practices such as the confidentiality of the participants and the protection from leakage of the answers given by the participants. They were informed that the answers they submitted should be all true and correct to their best knowledge and belief. After conducting the survey, the researchers tabulated and interpreted the collected data.

Moreover, the researchers used various statistical treatments, such as percentage and frequency, to assess and evaluate the respondents' demographic profile while using the mean score to interpret the respondents' responses to the survey questionnaire. To arrive at definite interpretation and findings, the researchers score and mean ranges for the scale:

Scale Ranges	Qualitative Description
4.21 - 5.00	High Impact
3.41 - 4.20	Great Impact
2.61 - 3.40	Moderate Impact
1.81 - 2.60	Low Impact
1.00 - 1.80	No Impact

IV. RESULTS

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

1.1.age,

1.2.family size, and

1.3.budget?

Table 1

Age of the respondents

Age	Frequency (F)	Percentage (%)
31-35 years old	27	25%
36-40 years old	21	19.44%
41-45 years old	32	29.63%
46-50 years old	15	13.89%
51 years old and above	13	12.04%
Total	108	100%

Table 1 shows the frequency and percentage of the age of the respondents. First, 27 respondents or 25% of the total respondents belong to the age range of 31 to 35 years old. Second, 21 respondents or 19.44% of the total respondents belong to the age range of 36 to 40 years old. Third, 32 respondents or 29.63% of the total respondents belong to the age range of 41 to 45 years old. Fourth, 15 respondents or 13.89% of the total respondents belong to the age range of 46 to 50 years old. Lastly, 13 respondents or 12.04% of the total respondents belong to the age range of 51 years old and above. The result shows that among the 108 respondents, most of them were aged from forty-one (41) to forty-five (45) years old. Conversely, respondents aged 51 years old and above have the least number of respondents. Therefore, the majority of the mothers of Grade 12 ABM students at Olivarez College Tagaytay belong to the middle range from the given age group of mothers.

According to Pratap (2017), age is an essential demographic factor that affects the buying behavior of a consumer. People's needs are changing as they grow up. Their purchasing decision-making habits have also changed. Our health needs, as well as many other needs, shift as we grow older. People's lifestyles change as they grow older, and their needs and personal values change as well. People spend more money on their lifestyle needs when they are young, from fun and movies to clothes. As they get older, their living expenses rise.

Table 2*Family Size of the respondents*

Family Size	Frequency (F)	Percentage (%)
1-4	36	33.33%
5-8	69	63.89%
9-12	3	2.78%
13 and above	0	0%
Total	108	100%

Table 2 shows the frequency and percentage of the family size of the respondents. First, 36 respondents or 33.33% of the total respondents belong to the family size of 1 to 4. Second, 69 respondents or 63.89% of the total respondents belong to the family size of 5 to 8. Third, only 3 respondents or 2.78% of the total respondents belong to the family size of 9 to 12. Lastly, there are no respondents that belong to the family size of 13 and above.

The results show that among the 108 respondents, the majority of them have a family size of five (5) to eight (8). Conversely, the family size thirteen (13) and above has the least number of frequency and percentage that were both valued as 0.

According to Michael Bauer Research (2020), the average household size in the Philippines is 4.4 people per household that was calculated by dividing the household population by total households. This shows that the majority of the respondents' family size belong to the slightly above average household (family) size. Moreover, Pratap (2017) stated that the number of traditional and larger families are declining as time goes by.

Table 3*Budget of the Respondents*

Budget	Frequency (F)	Percentage (%)
500 and below	9	8.33%
501-1000	23	21.30%
1001-1500	20	18.52%
1501-2000	18	16.67%
2001 and above	38	35.19%
Total	108	100%

Table 3 shows the frequency and percentage of the respondents' budget for their expenditures per week. First, 9 respondents or 8.33% of the total respondents allocated 500 pesos and below for their budget. Second, 23 respondents or 21.30% of the total respondents allocated

501 pesos to 1000 pesos for their budget. Third, 20 respondents or 18.52% of the total respondents allocated 1001 pesos to 1500 pesos for their budget. Fourth, 18 respondents or 16.67% of the total respondents allocated 1501 pesos to 2000 pesos for their budget. Lastly, 38 respondents or 35.19% of the total respondents allocated 2001 pesos and above for their budget.

The results show that the majority of the respondents have a budget of 2001 and above while the budget 500 pesos and below has the least number of respondents. Therefore, respondents allocated their budget based on their respective expenditures. According to Alamdhien and Ardiansyah (2016), a budget is an amount of money owned by someone and then organized for the purpose of allocating expenditures over a period of time.

Furthermore, consumer buying behavior is classified as a maximization problem, meaning that a consumer makes the best use of his limited resources in order to maximize its usefulness. Since consumers can't help but to spend their resources and buy goods and/or services which they can consume, one factor that can limit their consumption is their budget. Alamdhien and Ardiansyah (2016) also stated that each individual will use the limited budget for purchasing goods in the hope of having the maximum satisfaction.

Problem 2. What are the impacts of the pandemic on the buying behavior of mothers of Grade 12 ABM students in terms of:

- 2.1. economical aspect,**
- 2.2. cultural aspect,**
- 2.3. personal aspect,**
- 2.4. psychological aspect, and**
- 2.5. Social aspect?**

Table 4

Impact of COVID-19 pandemic to the consumer buying behavior on economical aspect of the respondents

Economical Aspect	Weighted Mean	Verbal Interpretation
1. I consider my financial condition during shopping amidst the pandemic.	4.06	Great Impact
2. I consider the prices of the products when shopping amidst a pandemic.	4.25	High Impact
3. Now amidst the pandemic, I consider budgeting when shopping.	4.34	High Impact
4. Amidst pandemic, I consider borrowing money from other people if I am lacking in money.	2.65	Moderate Impact
5. I have saved up money in case an emergency or crisis like the pandemic happens.	3.99	Great Impact
Total	3.86	Great Impact

Table 4 shows the impact of the pandemic on the individual items under the economical aspect. Among the five specific items, considering budgeting when shopping amidst pandemic attained the highest weighted mean of 4.34, which was verbally interpreted as High Impact. While considering borrowing money from other people if they are lacking in money attained the lowest weighted mean of 2.65, which was verbally interpreted as Moderate Impact. Therefore, budgeting mostly influenced the consumer buying behavior of the mother amidst pandemic in terms of economical aspect and that having loans and debts to sustain their financial needs has a moderate consideration.

The overall weighted mean for the economical aspect is 3.86, which was verbally interpreted as Great Impact. Consumer buying behavior is influenced largely by economic factors. Economic aspects that influence consumer buying behavior are personal and family

income, income expectations, savings, and other economic factors like loans and debt, unemployment, and inflation (Ramya & Ali, 2016).

Moreover, the COVID-19 pandemic slowed down the global economy. Many employees all around the world have lost their jobs, resulting in unemployment and rising unemployment rate. Majority of employees that have not lost their jobs see their incomes cut, and it has a major effect on their buying behavior since it provides the ability to purchase goods. Savings also influence the buying behavior of an individual by large means. If a person, especially mothers, have their savings in case of emergencies, it can change the expenditure of their family and provide more financial security. (Cheng, 2020)

Table 5

Impact of COVID-19 pandemic to the consumer buying behavior on cultural aspect of the respondents

Cultural Aspect	Weighted Mean	Verbal Interpretation
6. My society's culture affects my buying behavior.	3.54	Great Impact
7. I still take in consideration my family's culture when shopping amidst pandemic.	3.81	Great Impact
8. Our family's food preferences have been changed due to the pandemic.	3.44	Great Impact
9. I have saved up money in case an emergency or crisis like the pandemic happens.	3.81	Great Impact
10. My family size affect my buying behavior amidst pandemic	3.51	Great Impact
Total	3.62	Great Impact

Table 5 shows the impact of the pandemic on the individual items under the cultural aspect. Among the five specific items in this aspect, both still taking consideration of their family's culture when shopping amidst pandemic and having saved up money in case an emergency or crisis like the pandemic happens attained the highest weighted mean of 3.81, which is verbally interpreted as Great Impact. While changing their family's food preference due to the pandemic attained the lowest mean score of 3.44, which was verbally interpreted as Great

Impact. Therefore, the respondents' culture is still taken in consideration for their buying behavior amidst pandemic and there has been change in their food preference amidst pandemic.

The overall weighted mean for the cultural aspect is 3.62, which was verbally interpreted as Great Impact. Furthermore, cultural influences are a set of beliefs and values held by a specific community or group of people. It is an individual's culture that determines how he or she acts. To put it another way, culture is nothing more than an individual's beliefs. As a child, what a person learns from his parents and relatives becomes his culture. According to Williams (2019), a person's culture has a huge influence on their thought processes and behaviors. Because it's so influential on how people perceive the world around them, their place in it, and how they make decisions, it tends to play a role in determining how and why we consume goods and services.

Table 6

Impact of COVID-19 pandemic to the consumer buying behavior on personal aspect of the respondents

Personal Aspect	Weighted Mean	Verbal Interpretation
11. My age and experience helps me with my purchasing behavior amidst pandemic	3.98	Great Impact
12. I only buy products that I need during the pandemic.	4.13	Great Impact
13. I prefer online shopping more than shopping outside in this time of the pandemic.	3.36	Moderate Impact
14. I have adjusted to online shopping rather than buying in the market	3.28	Moderate Impact
15. I consider edible products as my priority in buying during the pandemic	3.84	Great Impact
Total	3.72	Great Impact

Table 6 shows the impact of the pandemic on the individual items under the personal aspect. Among the five specific items in this aspect, only buying things that they need amidst pandemic attained the highest weighted mean of 4.13, which is verbally interpreted as Great Impact. While adjusting to online shopping rather than buying in the market attained the lowest

mean score of 3.28, which was verbally interpreted as Moderate Impact. Therefore, the respondents are prioritizing things they need amidst pandemic and adapting to new ways of buying goods such as online shopping.

The overall weighted mean for the personal aspect is 3.72, which is verbally interpreted as Great Impact. According to Ramya and Ali (2016), the age of a person is one of the essential personal factors that affects buyer behavior. They also stated that people are buying different products at different stages of their life. Their priorities in buying products also change with change in life cycle. Moreover, Sheth (2020) said that consumers are learning improvisation and habits in consuming. For example, buying goods through online shopping has increased since there are still restrictions on going outside. But still, it has a moderate impact based on its weighted mean score because not all the respondents have enough knowledge about online purchasing.

Table 7

Impact of COVID-19 pandemic to the consumer buying behavior on psychological aspect of the respondents

Psychological Aspect	Weighted Mean	Verbal Interpretation
16. I have experienced panic buying because of the pandemic	3.03	Moderate Impact
17. I care about people's opinions when I buy things.	3.31	Moderate Impact
18. I consider the brands of the products when shopping	3.56	Great Impact
19. I often change to another product if I had a bad experience with the previous one.	3.94	Great Impact
20. Purchasing many essential kits to protect my family from COVID-19 virus is a must during the pandemic.	4.19	Great Impact
Total	3.61	Great Impact

Table 7 shows the impact of the pandemic on the individual items under the psychological aspect. Among the five specific items in this aspect, purchasing many essential kit to protect their family from COVID-19 virus being a must during the pandemic attained the

highest weighted mean of 4.19, which is verbally interpreted as Great Impact. While having to experience panic buying because of the pandemic attained the lowest mean score of 3.03, which was verbally interpreted as Moderate Impact. Therefore, the respondents are ensuring the health of their family by purchasing essential kits against the virus which can also lead to moderate panic buying.

The overall weighted mean for the psychological aspect is 3.61, which is verbally interpreted as Great Impact. The buying behavior of consumers is influenced by many psychological factors. The motivation, perception, attitude, and beliefs are some of the most important psychological factors. (Juneja, 2015) In terms of motivation, there are many things which motivate individuals to purchase products and services. For instance, purchasing many essential kits against the COVID-19 virus has gained the highest weighted mean score. It shows that the pandemic motivated the respondents to purchase them in order to protect their family against the deadly virus. In terms of perception, it is what an individual thinks about a particular product or service. It can also consider other people’s perception or opinion. Lastly, consumers' purchasing decisions are heavily influenced by their beliefs and attitudes. Consumers buy goods and services based on their emotions about a product or service. Even if a product is outstanding, if the respondents think it is useless, they will not purchase it.

Table 8
Impact of COVID-19 pandemic to the consumer buying behavior on social aspect of the respondents

Social Aspect	Weighted Mean	Verbal Interpretation
21. My family size affects my purchasing behavior amidst pandemic.	3.61	Great Impact
22. My family are the most influential people that affect my buying behavior amidst pandemic.	3.81	Great Impact
23. I consider my friends’ advice when I buy things amidst pandemic	3.33	Moderate Impact
24. I still consider my family desires when shopping amidst pandemic	3.77	Great Impact
25. The big change in our society affected how I purchase goods.	3.93	Great Impact
Total	3.69	Great Impact

Table 8 shows the impact of the pandemic on the individual items under the social aspect. Among the five specific items in this aspect, the big change in society affecting how they purchase goods attained the highest weighted mean of 3.93, which is verbally interpreted as Great Impact. While considering their friends' advice when buying things amidst pandemic attained the lowest mean score of 3.33, which was verbally interpreted as Moderate Impact. Therefore, the society where families of the respondents live has affected their view on how they purchase goods while moderately considering their friends' advice.

The overall weighted mean for the social aspect is 3.69, which is verbally interpreted as Great Impact. The COVID-19 pandemic has changed how people interact with one another. The lockdown was marked by a new way of organizing everyday life, with more time spent at home and less distance traveled thanks to digital devices. (Algeri, Saladino, & Auriemma, 2020) On another side, most of the families have to spend time together at home. It enables the family members to have a direct impact on how mothers purchase things. They have the ability to talk and discuss various issues to reach better solutions and ideas (Juneja, 2015).

V. DISCUSSION

Overall, the COVID-19 pandemic becomes very impactful to the buying behavior of the mothers of Grade 12 ABM students at Olivarez College Tagaytay in terms of economical, cultural, personal, psychological and social aspects. Nielsen Company (2020) stated that due to COVID-19 pandemic, consumers changed their buying habits and behaviors. In the economic aspect, it was the most impactful aspect to the buying behavior of the mothers of Grade 12 ABM students among the five aspects. It has the highest total weighted mean of 3.86, which is verbally interpreted as Great Impact. This shows that buying behavior of the mothers of Grade 12 ABM students at Olivarez College Tagaytay were mainly influenced by economical factors such as personal and family income, income expectations, savings, etc. (Ramya & Ali, 2016). Crises like the COVID-19 pandemic have caused a drop in economic activity (Fortin & Uncles, 2011) As for the personal aspect, the results show it was the second most impactful to the buying behavior of the mothers of Grade 12 ABM students which had a total weighted mean of 3.72, and a verbal interpretation of great impact. Age, lifestyle, and different stages in life are the major factors that affect their buying behavior as a consumer, and their buying priorities change as well when life cycles change too.

Due to this matter, mothers of the grade 12 ABM students learned to improvise their habits when buying. As for the social aspect, the results show it was the third most impactful to the buying behavior of the mothers of Grade 12 ABM students. It has resulted in a total weighted mean of 3.69 that is verbally interpreted as Great Impact. Since the COVID-19 pandemic led to lockdowns globally, social distancing implementation and the existence of new normal affects the buying behavior of the mothers of Grade 12 ABM students. On the other hand, it had a

positive impact as families had more time to spend together at home and were able to communicate with one another about purchasing matters. (Algeri et al., 2020). As for cultural aspects, the results show it was the fourth most impactful to the buying behavior of the mothers of Grade 12 ABM students. It has resulted in a total weighted mean of 3.62 that is verbally interpreted as Great Impact. The respondents' buying behavior amidst pandemic had hugely influenced their different cultures on thoughts and behaviors when buying. Since it has a huge influence on thought processes and behaviors, it plays a vital role in how we buy goods. (Williams, 2019) Lastly, psychological aspect was the fifth most impactful aspect with a total weighted mean of 3.61 that is verbally interpreted as Great Impact. Several important psychological factors such as motivation, perception, attitude, and beliefs influenced the mothers of Grade 12 ABM students with their buying behaviors. The said pandemic has caused changes in rational and emotional shopping (Larson & Shin, 2018).

The economic aspect was the most impactful aspect in the respondents' consumer buying behavior, while the psychological aspect was the least impactful. It means that though COVID-19 pandemic has a great impact on the livelihood and income of many families, Filipinos are still eager to look at life in a positive way. According to Marquez (2020), the characteristic resiliency has been carried by the Filipino family in everyday life. Resiliency is the ability to view different circumstances, disappointments, and hardships into a positive note. In addition, many families have improved their bonding and relationship, as well as a better understanding of which values are prioritized in their household. This shows that it also has a positive impact on the family's relationship, which makes the respondents feel secure with their family's presence. The overall weighted mean is 3.70 which means that CoViD-19 pandemic has a great impact on the consumer buying behavior of the mothers of Grade-12 Accountancy, Business and Management students of Olivarez College Tagaytay.

It should be noted that the respondents were limited to mothers of grade 12 ABM students at Olivarez College Tagaytay. The researchers focused solely on grade 12 students under the ABM strand since they have a broader understanding about business finance, economics and marketing than Grade 11 ABM students that can affect their mothers' purchasing behavior.

This study proved that the COVID-19 pandemic has a great impact on consumer buying behavior of mothers of Grade 12 ABM students. However, the data collected will not put an end to new discoveries on the impact of COVID-19 pandemic on consumer buying behavior of the mothers. Further research on the impact of COVID-19 pandemic to consumer buying behavior of the mothers of Grade 12 students from other strands can also be done to prove the validity of the limited scope of the study.

The researchers recommend the mothers to control their allocated budget and maximize the usefulness of their financial resources. Since mothers have more time to communicate with

their family, it can help them to listen and acquire different ideas on how they can buy different goods in a wise and effective way. Furthermore, the researchers recommend mothers to acquire contemporary ways of budgeting by downloading and using different budgeting applications. In that way, they can save up money and maintain a budget. Mothers can achieve excellent budgeting by consulting their Grade 12 ABM sons or daughters who have more knowledge in budgeting and accounting. According to Pineda (2021), there are best picks of budgeting applications that can be used through smartphones. These applications are GoodBudget, Money Lover, Wallet, and My Ipon Challenge. They can be downloaded in the Play Store or App Store. If the mothers want to have their own way of budgeting, they can use notes and memos to list down their expenditures per week in order to keep track on how much they spend and think of ways to lessen their spending. According to the Security Bank Team (2020), this is the right time in properly assessing our financial situation. It can be assessed by determining what exactly changed about it, what can be improved, and where opportunities to save more may come in. By properly coping up with the financial changes, we can assure that their consumer buying behavior will also be affected since they will have the ability to use their financial resources in a useful way.

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Effectiveness of Olivarez College Tagaytay students' portal as an online information dissemination tool for senior high students

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I. ABSTRACT

A student portal is an online portal through which students can access important information from the school's website. Even though it was implemented in schools, no recent researchers have examined the student portal's effectiveness. This study aimed to determine the effectiveness of the Olivarez College Tagaytay student portal as an online information dissemination tool for senior high school students in terms of functionality, usability, reliability, and efficiency. The researchers used a quantitative descriptive research design to describe the effectiveness in 323 Olivarez College of Tagaytay Senior High School students who were chosen using the stratified sampling technique and Slovin's Formula. The researchers used a Likert - type adapted - modified questionnaire from Kotze et al. (2010) in gathering the needed data and utilized different statistical treatments such as frequency and percentage for the demographic profile of the respondents while the mean score in analyzing and interpreting the collected data from the survey questionnaire. This study revealed that the student portal of the Olivarez College Tagaytay is an effective online information dissemination tool for senior high school students in terms of functionality, usability, reliability and efficiency.. Among the four features, usability is regarded as the most effective and reliability as the least. This implies that the students find it easy to navigate the students portal. It is user-friendly. However, this is also regarded as not really efficient in handling errors. That is, some improvements and modifications will be required to improve the students' portal used at this institution, particularly in terms of the portal's reliability.

Keywords: *Student portal, functionality, usability, reliability, efficiency*

II. INTRODUCTION

As society is diverse, creative innovations have emerged in various fields, especially in the field of education. In online learning, in particular, various knowledge and distribution techniques have been invented. A student portal is one of these strategies which is an online gateway for students to log in to access important program information on the school website. In addition, as mentioned by Krishana (2016), a portal is a purpose-built platform that helps to put together information in a uniform way from different sources. Also, the Online Student Portal is a web application that focuses mainly on those who are trying to learn as students and those who are trying to educate an instructor. This portal may exchange information in various formats, such as video, pictures, PDF, and others.

Additionally, this software is very helpful for learners to get updated with the latest information and to communicate with learners worldwide. According to Windsor (2010), student portals provide information on courses offered, transcripts, email services, schedules, test schedules, and contact numbers for the department. Furthermore, as stated by Zinck (2017), its new web content management platform-based portal strategies include improved online 'brand forward experiences, a more agile and web-friendly integration strategy with back office and legacy applications, and support for more immersive content and web experiences.

Moreover, users have access to all settings, features, resources, and other interactive elements once they log in to an online portal. Users who have this access can customize their portal by changing settings and preferences. In addition, there are features of the student portal which have been very important and useful for the students, staff, parents, and teachers to gather information or updates from the school like the student managements, accessibility to grades, enrollment, examinations, and events scheduling. Similarly, Creatix Campus (2014) stated that the students, staff, and parents can display and perform functions such as registration, attendance, grades, timetable, report card, library, hostel, and more from the college or university's website and mobile devices through online portals. Further, students, faculty, and parents may receive automated email and SMS updates from college administrators. The college management system can produce customized reports on demand. Likewise, the Olivarez College of Tagaytay Online Portal has custom profiles with an infinite number of custom categories and fields. Students can exchange academic records, enroll in academic courses and monitor students' progress through degree programs, allow teachers to measure student proficiency and add custom grading areas, and calculate the final grade based on standards, a points system. Colleges may use the online calendar to plan meetings, programs, holidays, and activities. Also, students can take a look at the financial aid packages available to students.

A recent study by Chopra et al. (2019) stated that quality of the system and quality of service has been shown to contribute more to the e-learning system compared to the quality of information. Respondents believe that the information available on the website may not be that

helpful because it was a one-way mode of communication. Students perceive the accessibility factor for immediate information as the most critical. Some challenges come with this development, such as the lack of productivity, effectiveness, accuracy, and quality of the student portal service. Service efficiency was the most important usability factor on the portal considered by users in general usability, according to a study by Hussain et al. (2018).

Furthermore, ISO/IEC 9126 is an international standard aimed at ensuring the quality of all software-intensive products. It can be used for software quality control, software quality assurance, and software process improvement. The use of ISO 9126 (or any other quality model) to derive system specifications clarifies the function and defines the operational capability.

In connection to this, Olivarez College Tagaytay uses its students' portal as an information dissemination platform. However, no recent studies have provided evidence on the student portal's effectiveness. Therefore, the researchers conducted this study to determine the effectiveness of the Olivarez College Tagaytay Students Portal as an online information dissemination platform for senior high school students. Specifically, this study sought to answer the following questions:

1. What is the demographic profile of the respondents in terms of:
 - 1.1. age,
 - 1.2. grade level,
 - 1.3. gender, and
 - 1.4. strand?
2. What is the level of effectiveness of the Olivarez College Tagaytay student portal to the senior high students in terms of:
 - 2.1. functionality,
 - 2.2. usability,
 - 2.3. reliability, and
 - 2.4. efficiency?
3. What is the overall effectiveness of the Olivarez College-Tagaytay student portal to the Senior High students?

III. METHODS

The researchers used a quantitative descriptive research design that allows them to describe the nature that occurs within the demographic segment towards a phenomenon using an observational method (Bhat, n.d.). Descriptive research was a fact-finding study with adequate accurate interpretation of data of what was described.

The researchers used stratified sampling technique. This is used in dividing the population into smaller subgroups based on shared attributes and characteristics from one another (Hayes, 2019). From a total population of 1666 senior high school students of Olivarez College Tagaytay, the researchers used Slovin's formula to get the size of the sample to be used that resulted in a total of 323 selected senior high school students participating in the study.

The researchers used an adapted-modified questionnaire from Kotze et al. (2010) that underwent a reliability test. The questionnaire has two (2) parts. The first part was designed to know the demographic profile of the respondents. The second part assessed the respondents' reactions to the use of the student online portal of Olivarez College Tagaytay. Emphatically, the information, opinions, and reactions of the respondents were gathered with confidentiality and used for research purposes only.

Pilot testing and reliability tests were performed by the researchers. With this, Cronbach's alpha was used wherein the reliability test yielded a score of 0.948, with an interpretation of very reliable based on the 13 questions. The researchers then asked permission of the senior high school advisers and students of Olivarez College of Tagaytay. After that, the researchers distributed the copies of the survey questionnaires in the form of Google Forms to selected respondents via messenger. After the students have completed the survey questionnaire, the researchers collected and compiled it.

Further, the researchers used different statistical treatments such as percentage and frequency used to determine and analyze the demographic profile of the respondents while the mean score was used to interpret the response of the participants on the survey questionnaire. For the purpose of arriving at a definite interpretation of the findings, the researchers score and mean ranges for the scale.

Arbitrary Scale	Verbal Interpretation
3.26 – 4.00	Very Effective
2.51 – 3.25	Effective
1.76 – 2.5	Slightly Effective
1.00 – 1.75	Not Effective

IV. RESULTS

Problem no. 1: What is the demographic profile of the respondents in terms of:

- 1.1. age,
- 1.2. grade level,
- 1.3. gender, and
- 1.4. strand?

Table 1

Age of the respondents

Age	Frequency (f)	Percentage (%)
16	37	11.46%
17	144	44.58%
18	121	37.46%
19	21	6.50%
Total	323	100%

Table 1 depicts that 37 or 11.46% are sixteen (16) years old; 144 or 44.58% are seventeen (17) years old; 121 or 37.46 % are eighteen (18) years old and 21 or 6.50% are nineteen (19) years old; wherein the least respondent is at age 19 years old while most of the respondents were 17 years old. In addition, the average age of senior high school students ranges from 16 to 18 years old (Macha et al., 2018).

Table 2

Gender of the respondents

Gender	Frequency (F)	Percentage (%)
Male	120	37.15%
Female	203	62.85%
Total	323	100%

Table 2 depicts that 120 or 37.15% of the respondents are male while 203 or 62.85% of the respondents are female. This shows that female students have the most number of respondents.

Table 3

Grade Level of the Respondents

Grade Level	Frequency (F)	Percentage (%)
11	157	48.61%
12	166	51.19%
Total	323	100%

Table 3 depicts that 157 or 48.61% are grade 11 and 166 or 51.19% are grade 12; wherein the majority of the respondents are grade 12 students. Accordingly, more grade 12 students used the student's portal for academic and information purposes, as well as applying for tertiary institutions, than grade 11 students (Czuba, 2020).

Table 4

Strand of the respondents

Strand	Frequency (F)	Percentage (%)
STEM	81	25.08%
HUMSS	144	44.58%
ABM	48	14.86%
GAS	8	2.48%
H.E.	26	8.05%
I.C.T.	16	4.95%
Total	323	100%

Table 4 depicts that 144 or 44.58% of the respondents were from Humanities and Social Sciences Strand (HUMSS); 81 or 25.08% were from Science Technology Engineering and

Mathematics Strand (STEM); 48 or 14.86% were from Accountancy Business and Management Strand (ABM); 26 or 8.05% were from Technical-Vocational and Livelihood- H.E. Strand (TVL-H.E.);16 or 4.95% were from Technical-Vocational and Livelihood- I.C.T. Strand (TVL-I.C.T.) and 8 or 2,48% were from General Academic Strand (GAS); wherein the least respondents were GAS while most of the respondents were HUMSS.

Problem No. 2: What is the level of effectiveness of the Olivarez College Tagaytay student portal to the senior high students in terms of:

2.1. functionality,

2.2. usability,

2.3. reliability, and

2.4. efficiency?

Table 5

Effectiveness of Olivarez College Tagaytay Students' Portal as an Online Information Dissemination Tool for Senior High Students in terms of Functionality

Functionality	Mean Score	Verbal Interpretation
The software can perform the tasks required.	3.20	Effective
The result is accurate as expected.	3.15	Effective
The system can interact with another system.	3.09	Effective
The software prevents unauthorized access.	3.14	Effective
Total Mean	3.15	Effective

Table 5 presents the functionality of the student portal which is verbally interpreted as effective with a total mean score of 3.15. Based on the result, the software can complete a task and keep to its purpose. It is sustainable, accurate, interoperable, secure, and functionally compliant, and it aids in meeting the needs of students. Among the four indicators under the category of functionality, the statement “*The software can perform the tasks required.*” got the highest mean score which is 3.20 that is verbally interpreted as effective whereas “*The system can interact with another system.*” got the lowest mean score which is 3.09 but is still verbally interpreted as effective. This means that the program can perform the tasks; but, when it comes to interacting with other software, the results are low. According to Ferris (2013), functionality is

effective in the interactions of systems and software output that enable interaction with other software agents using internet-based protocols.

Table 6

Effectiveness of Olivarez College Tagaytay Students' Portal as an Online Information Dissemination Tool for Senior High Students in terms of Usability

Usability	Mean Score	Verbal Interpretation
The user knows how to use the system easily.	3.30	Very Effective
The user learns how to use the system easily.	3.37	Very Effective
The user uses the system without much effort.	3.14	Effective
There is a usable interface.	3.16	Effective
Total Mean	3.24	Effective

Table 6 presents the usability of the student portal which is verbally interpreted as effective with a total mean score of 3.24. This revealed that the usability of the Student Portal of Olivarez College of Tagaytay as an online information dissemination tool for Senior High Students is effective. Based on the results, it is capable of being understood, learned, and used by the users. Among the four indicators under the category of usability, the statement “*The user knows how to use the system easily.*” got the highest mean score of 3.37 which is verbally interpreted as very effective. On the other hand, the statement “*The user uses the system without much effort.*” got the lowest mean score which is 3.14, but was still verbally interpreted as effective. This means that they can learn the software quickly, but in some cases, there is a low result when it comes to how simple it is to use. According to Bringula (2016), the usability of a portal is effective based on the performance of the interface and ease of use.

Table 7

Effectiveness of Olivarez College Tagaytay Students' Portal as an Online Information Dissemination Tool for Senior High Students in terms of Reliability

Reliability	Mean Score	Verbal Interpretation
The faults in the software were eliminated over time.	2.89	EFFECTIVE
The software is capable of handling errors.	2.92	EFFECTIVE
The software resumes working and restores lost data after failure.	2.97	EFFECTIVE
Total Mean	2.93	EFFECTIVE

Table 7 presents the reliability of the student portal which is verbally interpreted as effective with a total mean score of 2.93. This revealed that the reliability of the Student Portal of Olivarez College of Tagaytay as an online information dissemination tool for senior high students is effective. Given the results, the software is capable of sustaining its purpose under any circumstances. It is able to fix and manage problems overtime and is reliable to handle the data after a certain failure. Among the four indicators under the category of reliability, the statement *“The software resumes working and restores lost data after failure.”* got the highest mean score which is 2.97, which was verbally interpreted as effective. On the other hand, the statement *“The software is capable of handling errors.”* got the lowest mean score of 2.89, but were still verbally interpreted as effective. This means that after a failure, the software resumes service and recovers missing data. But, in certain situations, where program errors are repaired over time, the result is still low.

Further, according to Budiman et al. (2018), a report showed that reliability is effective in web server performance under normal and extreme loads because it is capable of sustaining its performance and errors over time, such as the availability of essential information and services and faults and errors in software.

Table 8

Effectiveness of Olivarez College Tagaytay Students' Portal as an Online Information Dissemination Tool for Senior High Students in terms of Efficiency

Efficiency	Mean Score	Verbal Interpretation
The system responds quickly.	3.07	Effective
The system utilizes resources efficiently.	3.20	Effective
Total Mean	3.14	Effective

Table 8 presents the efficiency of the student portal which was verbally interpreted as effective with a total mean score of 3.14. This revealed that the Olivarez College Tagaytay Students' Portal's efficiency as an online information dissemination tool for Senior High Students is effective. Based on results, the software excels in providing appropriate features. It is intuitive, accessible and well-structured. Between the two indicators under the category of reliability, the statement "*The system utilizes resources efficiently.*" got the highest mean score which is 3.20, which was verbally interpreted as effective. On the other hand, the statement "*The system responds quickly.*" got the lowest mean score which is 3.07, but was still verbally interpreted as effective. This means that the system makes efficient use of resources, as shown by its high performance. However, despite the fact that the program is often fast to answer, it still results in a low score. Indeed, efficiency is effective to provide quick performance relative to the number of resources utilized, under stated conditions (Kotze et al., 2010).

Problem No. 3: What is the overall effectiveness of the Olivarez College Tagaytay student portal to the senior high students?

Table 9.

Overall Effectiveness of Olivarez College Tagaytay Students' Portal as an Online Information Dissemination Tool for Senior High Students

Characteristics	Mean Score	Verbal Interpretation
Functionality	3.15	Effective
Usability	3.24	Effective
Reliability	2.93	Effective
Efficiency	3.14	Effective
Grand Mean	3.12	Effective

Table 9 shows the overall effectiveness of Olivarez College Tagaytay Student Portal as an online information dissemination tool for senior high students. It shows that among the four categories, Usability obtained the highest mean score of 3.24 which is verbally interpreted as effective whereas reliability obtained the lowest mean score with a total of 2.93 but is still verbally interpreted as effective.

Thus, the total mean score of the four characteristics obtained is 3.12 which is verbally interpreted as effective. The total mean score indicates that the Student Portal is effective as an online information dissemination tool for senior high school students.

Similarly, in the study of Secreto et al. (2015), the respondents regarded the student portal platform as a convenient and effective means of receiving relevant and complete information about their grades, school events, academic schedules, and other learning-related transactions. Because of these characteristics, the portal has become an important student support platform that can help online learners develop their learning experience.

V. DISCUSSION

Overall, the researchers concluded that the four characteristics of a student portal (functionality, usability, reliability, and efficiency) all contribute to the effectiveness of the portal as an online information and dissemination tool. That is, the system is competent in interacting with other systems, providing sufficient protection, providing the expected results, and completing the tasks at hand. According to Pandya (2019), a portal must create a flexible online user interface that meets the needs of users. As regards to usability, the program is very easy to use as shown in its results. The users can effortlessly use the system is considered effective. This revealed that the program can be quickly learned and used with minimal effort. Also, it shows that the program also has a user-friendly interface. According to Youngblood (2021), a web portal interface must be easy to use, with clear navigational structures and mobile device compatibility. In terms of reliability, the results show that the software can manage errors and fix them over time, resume running and restore data and meet established reliability standards. As to ISO 9126 (2019), the reliability of a portal is the software's ability to maintain its level of performance for a given time under defined conditions. Lastly, as regards efficiency, this revealed that the program can respond and utilize the resources efficiently and quickly. In addition, according to ISO 9126 (2019), efficiency influences the relationship between software performance and the number of resources consumed under specified conditions.

However, the scope of the study was limited in determining the effectiveness of the student's portal in terms of functionality, usability, reliability, and efficiency in Olivarez College Tagaytay only. Conversely, the ISO considers six features when assessing a student portal, but due to the respondents' extent of knowledge and experience in accessing student portal,

maintainability and portability were not be evaluated because the respondents were not experts and that make them incapable of giving credible answers to concerns regarding maintainability and portability. That being said, the study's target respondents were limited to senior high school students at Olivarez College Tagaytay, with ages ranging from 16 to 19 years old.

Therefore, more in-depth research will be required to uncover additional relevant information. Based on the findings, some changes are recommended for a better user experience. The researchers suggest having a seminar or orientation on how to use the Olivarez College Tagaytay Student Portal. Also, using the portal as an online information and dissemination tool as part of the academic announcement regularly may help to raise student awareness of its use in various aspects, particularly in the presence of effective feedback. Some improvements and modifications will be required to improve the students' portal used in this institution, particularly in terms of the portal's reliability. The researchers also suggest that in the future, an investigation into maintainability and portability be conducted with the appropriate respondent who is familiar with those two other ISO characteristics of the student portal so that people can better understand the portal's effectiveness. Finally, by improving the web and service system to be used as an online information and dissemination tool, Olivarez College Tagaytay can improve the quality of online education it can provide.

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Quality of sleep during pandemic of grade 12 online students of Olivarez College Tagaytay

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I. ABSTRACT

Sleep quality is characterized as a person's satisfaction with their sleep experience which includes aspects such as sleep initiation, sleep maintenance, sleep quantity, and wakefulness. However, when the COVID-19 pandemic started, it significantly affected the sleep quality across different populations stated by Kocevaska et al. (2020). This study aimed to distinguish the quality of sleep of grade 12 PM session online students during the CoViD-19 pandemic. The researchers used a quantitative-descriptive research design to describe the quality of sleep of 213 grade 12 PM session online students that were selected with the use of stratified sampling technique and Slovin's formula. The researchers used a modified adapted questionnaire from the study titled "STOP, THAT and One Hundred Other Sleep Scales" from Marcu et al. (2012) in gathering the needed data, with the use of different statistical treatment including frequency and percentage for the demographic profile of the respondents and weighted mean score in analyzing and interpreting the necessary data from the adapted survey questionnaire. Generally, the researchers concluded that the respondents experienced a poor quality of sleep in times of COVID-19 pandemic that resulted in irritation and it leads the researchers to have more awareness on how students will get rid of it. Lastly, some students rarely experienced waking up while sleeping. Once it happens they find it hard to fall asleep again which leads to not getting enough quality of sleep that also affects their concentration on online class. The researchers would like to recommend a seminar for the teachers to guide the students and give awareness focusing on the effects of having a good and bad quality of sleep, and suggesting ways on improving one's sleeping habit and routine

Keywords: *quality of sleep, sleep initiation, sleep maintenance, sleep quantity, wakefulness, CoViD-19, senior high school students, Olivarez College Tagaytay*

II. INTRODUCTION

The growth and repair, restoration of energy, and consolidation of memory is a physiological process that is essential for sleep (Zeb et al., 2020). Sleep is also said to be a physiological adaptation to conserve energy, with enough sleep an individual can function better in their daily life. Moreover, sleep is an essential part of a person's daily routine (Crivello et al., 2019). Sleep restoration is linked to improved physical, cognitive, and psychological health. Based on the article of the National Institute of Health (2014), sleep is essential to humans' daily routine as well as food and water for survival. Also, it is a complex and dynamic method that may affect the function in a way scientists are starting up to believe. Hence, sleeping is not only something that feels good but also something necessary (Toyong et al., 2019).

As stated in Encyclopedia of Behavioral Medicine by Kline (2013), sleep quality is interpreted as one's pleasure of sleep experience, sleep maintenance, sleep quantity, integrating aspects of sleep initiation, and refreshment upon awakening. Quality is defined as the degree of excellence of a thing or general excellence. Therefore, sleep quality is the degree of excellence in sleep. Moreover, based on a literature review of preceding questionnaires and studies, the domains of sleep quality were determined as sleep initiation, sleep maintenance, depth of sleep, dreams, getting up after sleep, condition after sleep, effect on daily life, sleep amount, and satisfaction with sleep. In addition, based on the Encyclopedia of Behavioral Medicine (2013), for the reason of the high prevalence of disrupted sleep and insomnia, as well as the strong connection between sleep quality and optimal health and functioning, sleep quality is a crucial construct for clinicians and researchers. Despite its widespread use, "sleep quality" is a word that lacks a simple meaning (Krystal & Edinger, 2008). In addition, sleep quality is likely to mean different things to different people. The sleep onset cycle may be the most important indicator of sleep quality for someone who has trouble falling asleep. In comparison, for someone whose sleep is restless and fraught with frequent awakenings, the relative difficulty of getting to sleep may be a prime concern.

In connection to this, before the COVID-19 pandemic started, there have been studies about the amount and quality of students' sleep. According to Vail-Smith et al. (2009), there has been a mirroring of the broader population throughout the quantity and quality of sleep of a college student and it has changed over the past decades. Other studies also talked about the changes within the years and it has been stated by Fortunato and Harsh (2006) that there have been findings of the factors that have been related to sleep quality, these factors may include age. However, when the COVID-19 pandemic started, there were no published studies that addressed the problem of sleep quality as stated by Alnofaiey et al. (2020). Moreover, based on the findings of a study published in Sleep Medicine by Reeb (2020), the effect of the lockdown in response to the COVID-19 pandemic on sleep quality varies from individuals and is dependent on their pre-pandemic sleep quality. Despite the fact that studies have shown that the COVID-19

pandemic has a major effect on sleep quality throughout diverse demographics, the effect on sleep quality, especially among those who had poor sleep quality prior to the pandemic, is still yet to be determined.

According to Robillard (2020), the pandemic gives a high impact on people's sleep performance and shows some sleep difficulties; within their trials they found out that there are signs of serious sleep problems during the Covid 19 pandemic. As stated in an article *Int. J. Environ. Res. Public Health* by Blanco et al. (2020), CoViD-19 pandemic brought us changes in our lifestyle in terms of sleep quality that occur among the students and it also includes the prevalence of poor sleep quality among students is very high.

On the contrary, previous studies about sleep quality have commonly focused on the factors affecting the sleep quality of students. According to Altun et al. (2012), students stated that the most significant social factor affecting sleep was having family problems. For instance, University students generally indicated that psychological disorders and stress were major contributing factors to poor sleep experiences, as the authors discuss. Likewise, as stated by Wolfson (2010), they have found out that insufficient sleep and poor sleep quality are associated with stress, negative mood, and stress management. Perhaps, some studies stated how essential sleep quality is for students. As stated by Gamsky (2016), it develops the performance of the student's mental, emotional, and physical health by continually acquiring the quality of sleep. Also, it boosts their immune system, metabolism and enhances brain function. Additionally, based on the article of the Centers for Disease Control and Prevention CDC 24/7; *Saving Lives, Protecting People* (2019), healthy well-being provides sufficient sleep to a student. They must complete their sleep at night to enhance their concentration, academic performance, and to stay focused. Despite the prior observation about the factors that affect the sleep quality of the students, it remains unclear what is the sleep quality of a student. Since some literature reviews focus on factors affecting the sleep quality of an individual and based on the previous research evidence, the researchers have reason to speculate that the sleep quality of the students may also be affected or changed during the COVID-19 outbreak.

Therefore, the purpose of this study is to distinguish the quality of sleep of grade 12 PM session online students during the COVID-19 pandemic. As the study deals with the quality of sleep of Grade 12 PM session online students during the Covid 19 Pandemic, the result would be beneficial to the following: students, teachers, parents, and future researchers. The researchers were limited to having relevant information concerning the quality of sleep of grade 12 PM session online students of Olivarez College Tagaytay. This study aims to answer the following questions:

1. What is the demographic profile of the respondents in the terms of their:
 - 1.1 age, and
 - 1.2 gender?
2. What is the quality of sleep of the respondents during the CoViD-19 pandemic?

III. METHODS

The researchers used a quantitative descriptive design to gather numerical data and generalize it across groups of people or to explain a particular phenomenon by collecting data through polls, questions, and surveys, Babbie (2010). Their responses were used to know and determine the particular research questions for further research. In order to gather the necessary data, the researchers used stratified sampling techniques in dividing the population into smaller subgroups based on shared attributes and characteristics from one another (Hayes, 2019). From a total population of 456 grade 12 PM session online students of Olivarez College Tagaytay, the researchers used Slovin's formula to get the size of the sample to be used. It resulted in a total of 213 selected grade 12 PM session online students of Olivarez College Tagaytay. It was used to compute sample size. The researchers used a modified adapted questionnaire titled "STOP, THAT and One Hundred Other Sleep Scales" from Marcu, Shahid, Shapiro, Wilkinson (2012) in data gathering. This helped the researchers to gather data from the respondents to distinguish the quality of sleep of grade 12 online students of Olivarez College Tagaytay during COVID-19 Pandemic. After the researcher prepared the survey questionnaire, the researchers sent a formal letter that would request permission from the school's administration for the schedule of data gathering. Beyond approval, the researcher used Google Forms for the dissemination of the survey questionnaire.

Thereafter, the researchers interpreted and analyzed the data using statistical treatment. The researchers used descriptive statistics in analyzing, summarizing the data, and finding patterns. Particularly, the researcher used statistical treatment including percentage and frequency distribution to analyze the given information on the respondents' demographic profile. All the data are nominal and it is used to label variables without providing any quantitative value. To arrive at a definite interpretation of the findings, the researchers score and mean range;

Scale Ranges	Qualitative Description
3.26 - 4.00	Very Poor Quality
2.51- 3.25	Poor Quality
1.76 - 2.5	Good Quality
1.00 - 1.75	Very Good Quality

IV. RESULTS

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

1.1 age, and

1.2 gender?

Table 1

Age of the respondents

Age	Frequency	Percentage (%)
17	62	29.1%
18	128	60.1%
19	19	8.9%
20	3	1.4%
22	1	0.5%
Total	213	100%

Table 1 shows the frequency and percentage of the age of the respondents. First, 62 or 29.1 % of the respondents were 17 years old. Second, 128 or 60.1% were 18 years old. Third, 19 students or 8.9 % were 19 years old. Fourth, 3 students or 1.4% were 20 years old. Lastly, 1 student or 0.5% was 22 years old, with a total number of 213 respondents. The result shows that the majority of the respondents were 18 years old. The amount of sleep required varies from person to person, but it is closely associated with age. Chung and Cheung (n.d.) stated that students aged 12 to 19 required an average of 7.3 hours of sleep each night.

Table 2*Gender of the respondents*

Gender	Frequency (f)	Percentage (%)
Male	82	38.5%
Female	131	61.5%
Total	213	100%

Table 2 shows the frequency and percentage of the gender of the respondents. 82 students or 38.5% of the respondents were male and 131 students or 61.5 % were female, with a total number of 213 respondents. The data table shows that the majority of the grade 12 PM session online respondents of Olivarez College Tagaytay were female.

Problem 2: What is the quality of sleep of the respondents during the Covid- 19 pandemic?**Table 3***Quality of Sleep of Grade 12 PM Session Online Students during the Covid- 19 Pandemic*

	Indicators	Weighted Mean	Verbal Interpretation
1.	I have difficulty falling asleep.	2.63	Poor Quality
2.	I wake up while sleeping.	2.13	Good Quality
3.	I feel unlikely to sleep after sleep.	2.32	Good Quality
4.	Poor sleep gives me headaches.	2.84	Poor Quality
5.	Poor sleep makes me irritated.	2.85	Poor Quality
6.	Poor sleep makes me lose interest in work or others.	2.69	Poor Quality
7.	Poor sleep makes me forget things more easily.	2.62	Poor Quality
8.	Poor sleep makes it hard to concentrate on online classes.	2.71	Poor Quality
9.	Sleepiness interferes with my daily life.	2.67	Poor Quality
10.	I have difficulty getting out of bed.	2.62	Poor Quality
11.	Poor sleep makes me easily tired at work.	2.63	Poor Quality
	OVERALL	2.61	Poor Quality

Table 4 shows the quality of sleep of the grade 12 PM session online students respondents during the CoViD-19 pandemic. It resulted in a total weighted mean of 2.61 which is verbally interpreted as poor quality. Additionally, the table shows that the respondents of grade 12 PM session online students of Olivarez College Tagaytay who experienced poor sleep resulted in irritation, as stated in number five (5) statement resulted in the highest mean score of 2.85. In a study from SickKid (2021) mentioned that irritability, elevated stress, inattentiveness, learning difficulties, and low motivation are all signs of a lack of sleep. Conversely, students waking up while sleeping was found to be the lowest result among the eleven statements with a total mean score of 2.13. As stated and medically reviewed by Sullivan, Ph.D., MSN, R.N., CNE, COI (2019), waking up in the middle of the night can be very irritating, especially when it happens often.

The resulting study is relevant because according to Kocevskaja, et. al (2020) they discovered significant individual variations in the impact of the lockdown procedures on sleep quality perception.

V. DISCUSSION

Overall, the respondents have a poor quality of sleep during the CoViD-19 pandemic that caused them to feel irritated. It also causes them headaches and this interferes with their daily life and concentration on online class. According to Kocevskaja, et. al (2020), they discovered significant individual variations in the impact of the lockdown procedures on sleep quality perception. Importantly, this effect may work both ways: some people may have had better sleep quality during the pandemic, while others may have had bad sleep quality.

Moreover Kocevskaja et al. (2020), claimed that COVID-19 pandemic's effect on sleep quality varies significantly between participants and is dependent on pre-pandemic sleep quality and as a result, pre-pandemic healthy sleepers slept worse. The need for sleep differs from person to person, but it is closely associated with age. Sleeping requirements change during the life cycle, according to the Bethesda National Institutes of Health. Chung and Cheung stated that students aged 12 to 19 required an average of 7.3 hours of sleep each night. In addition, one hundred thirty-one students were female while eighty-two (82) students were male, in a total of two hundred thirteen (213) respondents. It demonstrates the result that the majority of respondents were female. According to Cruz (2019), Filipino women enroll in high school and college at substantially higher rates than men, as claimed by the study that tracks gender equality in 153 countries.

Moreover, the study of the 2020 Global Gender Gap Report of the World Economic Forum (WEF) found out that 71.3 percent of women are enrolled in secondary education and 40.4 percent are enrolled in college, in contrast to 60.2 percent and 40.4 percent, respectively,

among men. Furthermore, the researchers conclude that the respondents, Grade 12 PM session online students of Olivarez College Tagaytay who often experienced poor sleep resulted in irritation, as stated in number five (05) statement. It resulted in the highest mean score of 2.85. According to Epstein (2008), sleep and behavior are intertwined; insufficient or inconsistent rest can lead to irritation and stress, while adequate sleep can improve well-being. Conversely, students waking up while sleeping was found to be the lowest result among the eleven statements with a total mean score of 2.13. According to Pathak, MD (2020), during the night, the majority of people awaken once or twice. Caffeine or alcohol consumption late in the day, a bad sleeping environment, a sleep disorder, or another medical condition are all possible causes.

Nevertheless, knowing that the study examined the grade 12 PM session online students in Olivarez College Tagaytay experiencing poor quality of sleep during the COVID-19 pandemic, it does not include the quality of sleep of AM students. The scope of the study focuses only on the quality of sleep of PM session during the COVID-19 pandemic because only the grade 12 PM session online students coming from 10 sections of Olivarez College Tagaytay, as the researchers conclude that there are differences between the sleep quality of AM session and PM session.

Therefore, future researchers of this topic can make a judgment about the quality of sleep of the students, providing some improvements on how to give the students more time for ample sleep. The researchers would like to recommend a seminar for the teachers to guide the students and give awareness focusing on the effects of having a good and bad quality of sleep, and suggesting ways on improving one's sleeping habit and routine. In addition, future researchers might investigate potential treatments to improve sleep quality in times of the COVID-19 pandemic. It is necessary to conduct extra research when required to analyze potential causes and carry out relevant preventive measures.

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