ASSESSING THE IMPACTS OF HANDS-ON PRACTICES ON ACADEMIC PERFORMANCE IN COMPUTER SYSTEM SERVICING AMONG GRADE 12 INFORMATION AND COMMUNICATION TECHNOLOGY STUDENTS OF MEYCAUAYAN NATIONAL HIGH SCHOOL ACADEMIC YEAR 2024-2025

A Research Presented to Senior

High School Department

Meycauayan National High

School Bulacan

In Partial Fulfillment

of the Requirement for the Subject

Practical Research 2

Information and Communication Technology

(Hollerith)

By

ALDRIN JAMES A. ALCISO

January 2025

TABLE OF CONTENTS

Address: Camalig, City of Meycauayan, Bulacan
Telephone No. (044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

ACKNOWLEDGEMENT

The remarkable success of this research will never be possible without the help of these people who guided and assisted the researcher throughout the development of this study, and the researcher would like to address their sincere appreciation for these people.

First, the researcher wanted to express their deepest gratitude to their Practical research 2 Teacher Mr. Glenn V. Ferolino for guiding them on making this research appropriately, and for teaching them the disciplines and ethics that helped the researcher to develop this study.

The researcher are also thankful for the technical assistance and moral support of Ms. Bea Nessa P. Naldoza from ICT Babbage. Without her relentless efforts and support, this study wouldn't be possible to accomplish.

And lastly, the researcher wanted to express their gratitude towards the parents, participants and other researchers from related studies who helped this study by supporting the financial needs of the researcher, and by sustaining the essential information that this study needs. This research will be the representation of everyone's collective support and effort, and the researcher from this study are truly grateful to be part of this.

Address: Camalig, City of Meycauayan, Bulacan
Telephone No. (044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

ABSTRACT

This *descriptive quantitative research* explores on how the *practical activities* affect the academic performance of Grade 12 Information and Communication Technology students (**ICT**) in the subject of Computer System Servicing (**CSS**). The main objectives of this study are to *determine the underlying problems* within this research; and to *formulate a solution* by *acquiring the necessary data* from Grade 12 **ICT** students by employing *simple random sampling method* to efficiently collect data from the 20% of 139 Grade 12 active **ICT** students which is *28 total respondents*. Moreover, the calculated data that is acquired along on the progression of this study are generated with the help of *descriptive statistics* to classify the overall Weighted Average Mean (**WAM**) and by matching it on the labels of arbitrary table; the key findings found on the answers interprets that the quality of their performance in different categories of hands-on practices are 3.27 which represents an *Efficient performance* on their Hands-on practices while maintaining an overall level of confidence in all categories of hands-on practices of 2.07 which interprets that it is *Somehow easy* for them to execute different technical activities. However, the limitations in this study are caused by the *lack of experimentation* restricting broader acquisition of significant information. In conclusion, the findings of this study suggests that Hands-on practices have positively affected the academic performance of Grade 12 **ICT** students. Therefore, indicating that practical learning is more reliable for all students; to improve their knowledge and technical skillset thus, making them more prepared in real life situations.

Keywords: practical learning, computer, academic performance, technology, education

Address: Camalig, City of Meycauayan, Bulacan
Telephone No. (044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

INTRODUCTION

RATIONALE

"The future belongs to those who learn more skills and combine them in creative ways." This statement from Greene (2024) portrays the value of raw skills and knowing how to utilize it in creative ways, rather than merely having the knowledge and being unable to know how to apply it in specific situations. It is also undoubtedly important to employ different skills on the field of technology in order to have distinct advantages in different scenarios that requires technicality. Which corresponds on this study that had sought a definite answer on how impactful it is to focus on cultivating technical skills on the academic performance of Grade 12 Information and Communication Technology (**ICT**) Students in Computer System Servicing (**CSS**) subject.

This study explores the significance of technical skills in hands-on practices that are performed among Grade 12 ICT students which consist of variety of practical activities and lessons that requires technical knowledge and skills. Hands-on practices play a crucial role in maintaining an excellent quality of education on the whole ICT track by supporting them with practical and technical learning using the current curriculum which focuses on mainly performing both hardware and software hands-on practices which refers to different categories, and the following are: Hardware installation, Software Installation, Network Installation, and Hardware Maintenance. And these various categories of hands-on practices benefit the students to enhance their ability.

And according to almulla (2020) on a study titled "Effectiveness of Project-Based Learning in ICT" signifies the remarkable impacts of project-based learning to Information and Communication Technology (**ICT**) students. The results of this parallel study also states that project-based learning enables the students to improve their knowledge and sharing information, and this statement implies on how practical activities impact the students' learning quality.

On the other hand, the academic performance on this study refers as a crucial element for students' learning which serves as one of the key components on creating variety of skills and knowing the proper ways of applying those skills in real life situations. Additionally, according on conducted research by suleiman et al., (2024) titled "Key factors influencing students' academic performance" and this study emphasizes that by understanding the factors that affects academic performance can significantly improve the education quality and the learning outcomes of the students.

Moreover, the significant findings of the researcher from similar studies also suggests that practical based learning or Hands-on practices are a reliable source of a better quality of learning, and this statement can be proven by the following findings of the researcher from relative studies.

Address: Camalig, City of Meycauayan, Bulacan
Telephone No. (044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

Firstly, is from a study titled the "The Effects of Different Kinds of Hands-on Modeling Activities on the Academic Achievement, Problem Solving Skills, and Scientific Creativity of Prospective Science Teachers." Which states on the results of the conducted study by Demirhan & Şahin (2021) that the unstructured and semi-structured Hands-on Activities are more effective for the majority of the students in terms of improving their Academic Achievement Test (AAT). This related study also emphasize the effectiveness of Hands-on Practices on the academic performance of the students and how the practical activities can significantly impact the learning qualities of the students.

Furthermore, another study shows the implication of Hands-on practices in terms of learning qualities students receive, an example of this is a study conducted by Chen et al., (2020) titled "Developing a hands-on activity using virtual reality to help students learn by doing." And this study poses that using advance technological tools for effective learning which is the Virtual Reality (**VR)** technology can increase the academic performance of each student, leading to an instance of having a higher academic achievement for those who uses the advance tools for practical learning.

In addition, this study also provides the important information that this study needs and it justifies of how significant the impacts of Hands-on practices on the academic performance of Grade 12 Information and Communication Technology (**ICT)** students in Computer System Servicing (**CSS**) subject.

Similarly, to research conducted by Middleton (2020), Titled "The Longer-Term Impact of COVID-19 on K–12 Student Learning and Assessment" and according to this study, the lack of access on learning materials or less exposure to learning materials had negatively impact the students, resulting on a decrease of learning efficiency to them. Which is how parallel it is on this study, and also this study signifies the amount of time that the students engage on practical learning that the less engagement they do is the less quality of learning they will get.

And this statement from the researcher Middleton affirms the importance of the amount of time students should engage on practical activities and also for the right tools that should be used when conducting Hands-on activities, and all of these findings from the related study share a strong similarity within this study. Where the time and tools that is needed for Hands-on practices is also crucial in order to improve the academic performance of Grade 12 ICT students.

Additionally, this study will assess the impacts between Hands-on practices and the academic performance of Grade 12 Information and Communication Technology (**ICT)** students where the researcher had aimed to gather more evidences to form a concrete solution, and this study will also explore on how well the Grade 12 ICT students do in engaging on different kinds of Hands-on practices that requires different technical skills which focuses on utilizing both of their knowledge and skills in certain situations and how it affects their academic performance.

Address: Camalig, City of Meycauayan, Bulacan
Telephone No. (044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

Lastly, the researcher is assigned to execute the 4 main objectives in which the first objective of this study is to acquire the essential supporting details that this study requires from related literature of different researcher. The second objective pertains on identifying the issue within this study. For the third objective, is to gather and calculate the numerical findings that will be used as an interpretation collected from the Grade 12 ICT students, in order to form a concrete solution for what this study may need. And for the last objective, is to formulate the proposed solutions for the research problems within this study during its progression.

STATEMENT OF THE PROBLEM

There are several issues that had been resolved throughout the progression within this study, which focuses on *Assessing the impacts of Hands-on Practices on Academic Performance on the subject of Computer System Servicing* in which the researcher had aimed to study on how it affects the Grade 12 students of Information and Communication Technology.

Additionally, this study seeks to answer these distinct questions of this study.

1) What is the profile of the Grade 12 Information and Communication Technology students in terms of:
1.1 Age
1.2 Gender
1.3 Number of days attended in Computer System Servicing subject

2). What is the level of confidence on Hands-on practices in Computer System Servicing among Grade 12 Information and Communication Technology Students of Meycauayan National High School?

3). What is the quality of performance on Hands-on practices of Grade 12 Information and Communication Technology Students that affect the Academic Performance in Computer System Servicing subject?

SIGNIFICANCE OF THE STUDY

In this portion of this study, it shows how relevant this issue is within the Information and communication technology track and how Impactful the hands-on practices in the academic performance on Computer system servicing (**CSS**) of Grade 12 Students on Information and Communication Technology track. And for that reason, the researcher sought to determine the people who can have the benefits on this study and how it can help them in specific ways.

Address: Camalig, City of Meycauayan, Bulacan
Telephone No. (044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

And the following beneficiaries of this study are:

Grade 12 Information and Communication Technology Students: This research will guide them to identify on what areas they should improve in terms of technological hands-on practices.

Parents: This study will help them to be enlighten on what will be the effects of technological hands-on practices on the academic performance of their children.

Teachers: The findings of this study will benefit them in terms of improving their teaching strategies in technological hands-on activities.

Department of Education: They can use the findings of this study to reconsider on what things to improve in the field of technological hands-on practices.

Educational Technology Providers: They can gather insights on the impacts of the technological tools and materials they provide.

School Administrators: They can use the data of this study to assist them on how to allocate the resources effectively pertaining to the technical hands-on practices Information and Communication.

Technology industry: The technological industry might have the benefits of having much more better employees in terms of practical skills and also to inform them that technical abilities are very necessary on recruiting new employees on the future.

Future Researcher: This study can help the future researcher by using the findings of this study to acquire more related information that they need.

SCOPE AND DELIMITATION

During the development of this study there are certain delimitations that the researcher needs to consider. First of all, is the scope of this study which only spans within the topic of determining the impacts of hands-on practice, and the results of the academic performances in a major subject of computer system servicing.

The next one, is the target participant of this study which focuses on the students of Grade 12 Information and Communication Technology track. Additionally, the time and place of this study is also considered which is the Academic Year 2024-2025 on Meycauayan National High School in order to keep this study organize and to minimize the Scope of this study.

Address: Camalig, City of Meycauayan, Bulacan
Telephone No. (044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

METHODOLOGY

RESEARCH DESIGN

This study used the *descriptive quantitative research design* regarding on this collaborative research that pertains on Assessing the impacts of hands-on practices on academic performance in computer system servicing among grade 12 information and communication technology students of Meycauayan National High School academic year 2024-2025.

After applying this research design in this study, it allowed the researcher to save more time and collect the necessary information about the variables that this study needs without conducting any experiments. Additionally, using this research design this study had solely relied on observing the findings of this research, and also on determining the related studies that has been used as supporting details for study.

POPULATION AND SAMPLE

Throughout the accumulation of essential data for this study, the researcher had used a specific strategy to gather more data efficiently for a short period of time by the use of *simple random sampling.*

Moreover, after using the sampling method of this study by the researcher, the statistician of this collaborative study had sought to determine the total amount of active students on Grade 12 Information and Communication Technology track, which is a total number of 139 active students.

And by *multiplying* this value to 20 percent, the statistician had identified the necessary number of students to have taken participation on this study which is a total of 28 active students across the Information and Communication Technology track, and through the use of *simple random sampling* method the researcher gathered enough and accurate data that this study requires using the effective and systematic ways of collecting data.

DATA COLLECTION

Throughout the data acquisition pertaining to this study, the researcher sought to collect the essential data that this study requires through the use of a research instrument such as the research questionnaires which are distributed across the whole Grade 12 ICT track which contains several questions about the different categories of Hands-on practices which measures the quality of various factors.

Address: Camalig, City of Meycauayan, Bulacan
Telephone No. (044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

DATA ANALYSIS

Table 1: *Arbitrary table.*

1.00 – 1.74	**Easy**
1.75 – 2.49	**Somehow easy**
2.50 – 3.24	**Somehow difficult**
3.25 – 4.00	**Difficult**

1. What is the students' profile on Information and Communication Technology track (**ICT**) in terms of:

Table 2: A – 1 *Profile of respondents based on Age*

15 – 17 years old	13	46%
18 – 20 years old	15	54%
21 - Above	0	0%
Total:	28	100%

Table 2: A – 2 *Profile of respondents based on Gender.*

Male	16	57%
Female	8	29%
LGBTQIA+	4	14%
Total:	28	100%

Table 2: A – 3 *Profile of respondents based on Days attended on Computer System Servicing (CSS) class.*

0 – 60 days	6	21%
61 – 120 days	0	0%
121 – 181 days	0	0%
Perfect attendance	22	79%
Total:	28	100%

Address: Camalig, City of Meycauayan, Bulacan
Telephone No. (044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

2. Level of confidence on Hands-on practices in Computer System Servicing (**CSS)** subject.

Table 3: A – *HARDWARE INSTALLATION*

Q	**f(4)**	**f(3)**	**f(2)**	**f(1)**	**∑fx**	**WAM**	**Interpretation**
1	4	24	24	7	59	2.11	Somehow easy
2	8	30	8	12	58	2.07	Somehow easy
3	4	9	22	13	48	1.71	Easy
4	12	21	16	10	59	2.11	Somehow easy
5	0	18	18	13	49	1.75	Somehow easy

For question number 2 **Table 3: A**, the weighted average mean is **1.95**. Which states that the level of confidence students had in **Hardware installation** on Computer System Servicing Hands-on practice is **Somehow easy** for the Information and Communication Technology students, since most of them had prior knowledge and skills about the Hardware installation making this level of Hands-on practice convenient for them. And according on a conducted study by Kline et al., (2021) titled "Student Perspectives of Hands-On Experiential Learning's Impact on Skill Development Using Various Teaching Modalities" states that both external and visual factors have a significant impact on students' confidence in hands-on activities which can significantly increase their performance, similarly pertaining to this category of hands-on practice which highlights that it is somehow easy for them to accomplish this kind of hands-on practice due to their level of confidence towards this.

Table 3: B – *SOFTWARE INSTALLATION*

Q	**f(4)**	**f(3)**	**f(2)**	**f(1)**	**∑fx**	**WAM**	**Interpretation**
1	8	24	26	5	63	2.25	Somehow easy
2	4	27	16	10	57	2.04	Somehow easy
3	0	21	12	15	48	1.71	Easy
4	0	9	16	17	42	1.50	Easy
5	0	9	12	19	40	1.43	Easy

For question number 2 **Table 3: B**, the weighted average mean is **1.78**. Which states that the level of confidence students had in **Software installation** on Computer System Servicing Hands-on practice is **Somehow easy** for the Information and Communication Technology students, due to most of them find it simple to install a software in a computer. Additionally, as stated by Kline et al., (2021) on a study titled "Student Perspectives of Hands-On Experiential Learning's Impact on Skill Development Using Various Teaching Modalities" states both visible and tangible factors can affect the students' confidence on hands-on practices which can impact their overall performance, similarly on the results of software installation which suggests that it is somehow easy for Grade 12 ICT students to perform this type of hands-on practice due to their level of confidence and personal view.

Address: Camalig, City of Meycauayan, Bulacan
Telephone No. (044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

Table 3: C – *NETWORK INSTALLATION*

Q	f(4)	f(3)	f(2)	f(1)	∑fx	WAM	Interpretation
1	0	27	14	12	53	1.89	Somehow easy
2	12	27	24	4	67	2.39	Somehow easy
3	12	33	16	6	67	2.39	Somehow easy
4	0	36	16	7	61	2.18	Somehow easy
5	4	33	14	9	60	2.14	Somehow easy

For question number 2 **Table 3: C**, the weighted average mean is **2.19**. Which states that the level of confidence students had in **Network installation** on Computer System Servicing Hands-on practice is **Somehow easy** for the Information and Communication Technology students, because their experience thought them that they are capable of doing this type of Hands-on practice in a simple way. And according on a conducted study by Kline et al., (2021) titled "Student Perspectives of Hands-On Experiential Learning's Impact on Skill Development Using Various Teaching Modalities" highlights the importance of both physical and visual factors that enhances the confidence of students resulting to an excellent performance on hands-on practices, which is parallel on the results of network installation that it is somehow easy for them to execute this type of hands-on practice.

Table 3: D – *HARDWARE MAINTENANCE*

Q	f(4)	f(3)	f(2)	f(1)	∑fx	WAM	Interpretation
1	8	45	18	2	73	2.61	Somehow difficult
2	0	12	14	17	43	1.54	Easy
3	20	33	20	2	75	2.68	Somehow difficult
4	20	36	18	2	76	2.71	Somehow difficult
5	0	24	34	3	61	2.18	Somehow easy

For question number 2 **Table 3: D**, the weighted average mean is **2.34**. Which states that the level of confidence students had in **Hardware maintenance** on Computer System Servicing Hands-on practice is **Somehow easy** for the Information and Communication Technology students, because most of their practices consist of managing the Hardware of the computer. Additionally, according on a study by Kline et al., (2021) titled "Student Perspectives of Hands-On Experiential Learning's Impact on Skill Development Using Various Teaching Modalities" emphasizes that both physical and visible factors are responsible on increasing the students' confidence on the hands-on practices which can result into an increase of their performance, which is parallel on the results of this study which points out that hardware maintenance is somehow easy for them accomplish due to their perception of this of hands-on practice.

Address: Camalig, City of Meycauayan, Bulacan
Telephone No. (044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

Table 4: *Arbitrary table.*

1.00 – 1.74	**Inefficient**
1.75 – 2.49	**Somehow inefficient**
2.50 – 3.24	**Somehow efficient**
3.25 – 4.00	**Efficient**

3. Efficiency of your performance in different categories of Hands-on practices.

Table 5: A – *HARDWARE INSTALLATION*

Q	**f(4)**	**f(3)**	**f(2)**	**f(1)**	**∑fx**	**WAM**	**Interpretation**
1	44	39	2	3	88	3.14	Somehow efficient
2	48	33	6	2	89	3.18	Somehow efficient
3	56	36	2	1	95	3.39	Efficient
4	56	21	10	2	89	3.18	Somehow efficient
5	60	30	4	1	95	3.39	Efficient

For question number 3 **Table 5: A**, the weighted average mean is **3.26**. Which states that the efficiency in performance of Grade 12 Information and Communication Technology students on **Hardware installation** in Computer System Servicing Hands-on practice are **Efficient**, since they are properly prepared while performing this variety of Hands-on practice. Additionally, according to Alhadabi & Karpinski (2020) on a conducted study titled "Grit, self-efficacy, achievement orientation goals, and academic performance in university students" emphasizes the effects of putting consistent work and efforts towards their goal, similarly on the findings of this study that pertains on the hardware installation hands-on practice which suggests that their *efficient* work towards this category of hands-on practice are resulted from their consistent work and efforts.

Table 5: B – *SOFTWARE INSTALLATION*

Q	**f(4)**	**f(3)**	**f(2)**	**f(1)**	**∑fx**	**WAM**	**Interpretation**
1	68	27	0	2	97	3.46	Efficient
2	32	48	4	1	85	3.04	Somehow efficient
3	40	45	4	1	90	3.21	Somehow efficient
4	52	33	6	1	92	3.29	Efficient
5	64	30	0	2	96	3.43	Efficient

For question number 3 **Table 5: B**, the weighted average mean is **3.29**. Which states that the efficiency in performance of Grade 12 Information and Communication Technology students on **Software installation** in Computer System Servicing Hands-on practice are **Efficient**, due to their remarkable efforts they exert when conducting this variety of Hands-on practice. Additionally, according to a study by Alhadabi & Karpinski (2020) titled "Grit, self-efficacy, achievement orientation goals, and academic performance in university students"

Address: Camalig, City of Meycauayan, Bulacan
Telephone No. (044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

highlights the importance of working consistently and putting efforts towards their work, which is similar on the findings of software installation category of hands-on practice and it suggests that the reason behind their *efficient* work is their consistent efforts they exert.

Table 5: C – *NETWORK INSTALLATION*

Q	f(4)	f(3)	f(2)	f(1)	∑fx	WAM	Interpretation
1	60	30	4	1	95	3.39	Efficient
2	40	45	4	1	90	3.21	Somehow efficient
3	52	33	4	2	91	3.25	Efficient
4	72	18	6	1	97	3.46	Efficient
5	56	30	4	2	92	3.29	Efficient

For question number 3 **Table 5: C**, the weighted average mean is **3.32**. Which states that the efficiency in performance of Grade 12 Information and Communication Technology students on **Network installation** in Computer System Servicing Hands-on practice are **Efficient**, because of their brilliant strategies they had applied while accomplishing this type of Hands-on practice. Alhadabi & Karpinski (2020) titled "Grit, self-efficacy, achievement orientation goals, and academic performance in university students" points out that working consistently towards your goals is a great way to success, which is similar on the findings of this study that pertains on the network installation category of hands-on practice and it suggests that student's efficient performance are rooted from the consistent work of the students.

Table 5: D – *HARDWARE MAINTENANCE*

Q	f(4)	f(3)	f(2)	f(1)	∑fx	WAM	Interpretation
1	32	42	10	1	85	3.04	Somehow efficient
2	76	18	2	2	98	3.50	Efficient
3	40	39	8	1	88	3.14	Somehow efficient
4	28	45	8	2	83	2.96	Somehow efficient
5	56	30	6	1	93	3.32	Efficient

For question number 5 **Table 5: D**, the weighted average mean is **3.19**. Which states that the efficiency in performance of Grade 12 Information and Communication Technology students on **Hardware maintenance** in Computer System Servicing Hands-on practice are **Somehow efficient**, because of the preparedness they utilize in order to efficiently execute the proper methods and ethics in this variety of Hands-on practice. And according on a conducted study by Alhadabi & Karpinski (2020) titled "Grit, self-efficacy, achievement orientation goals, and academic performance in university students" highlights the students' work consistency towards achieving goals, which is parallel on the significant findings within the hardware maintenance which suggests that Grade 12 ICT should enhance their skills consistently in this category of hands-on practices in order for them to achieve their goals.

Address: Camalig, City of Meycauayan, Bulacan
Telephone No. (044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

RESULTS

The significant development of this study lies on its remarkable findings that the researcher had gathered, from different related literatures of different brilliant researcher and significant numerical findings of this study, and with the help of several participants across the Grade 12 Information and Communication Technology (**ICT**) track the researcher formulated the results for this study in order to solve its issue.

Moreover, these are the essential findings and methods that benefited the researcher to complete this study. First is the successful usage of the researcher on the research design which is the *descriptive quantitative research design*, this significant approach on this study guided the researcher to gather the important data through pure research without conducting any experiments. The next one is the successful calculation on finding the right number of participants that this study needs, by identifying the number of active students which is 139 active students across the Grade 12 Information and Communication Technology (**ICT**) track and by multiplying it to 20%, which is equivalent to *28 students* according to the statistician of this study, and this substantial calculation led the researcher to collect the necessary data within the 28 participants of this study. And through the effective use of the researcher on the sampling method which is the *simple random sampling method* the researcher conveniently collected the necessary data in a short period of time.

Furthermore, the crucial findings of the researcher managed to support this study to finally reach its point on completing the 2 main objectives of this study which are the following: The first objective is to identify the problem and form a solution for it, and the second objective is to gather the crucial information that this study demands from related studies of different researchers and collected data from acquiring important information from survey questionnaires. And starting to its first objective, the researcher had formed the specific problems that this research seeks to answer, and the following are:

- What is the students' profile on Information and Communication Technology track (**ICT**) in terms of:

1.1 In terms of **Age:**

15 – 17 years old	13	46%
18 – 20 years old	15	54%
21 - Above	0	0%
Total:	28	100%

From this table of demographic profile in terms of *age*, it shows how many participants had taken contribution in this study on every age bracket. Additionally, the researcher had found a significant impact that an age of a student would make a difference on their performance in Hands-on practices and according to several

Address: Camalig, City of Meycauayan, Bulacan
Telephone No. (044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

findings within this study the 13 out of 15 participants from the age bracket of 18 –20 years old performs much better due to their experience on doing technical tasks compared to the 9 out 13 participants from age bracket 15 – 17 years old that performs less better, and these findings are based on the question number 3 which measures the quality of students' performance on several categories of hands-on practices. And according on the relative findings of a study conducted by kalén (2020) titled "Effects of age on physical and technical performance in National Basketball Association (NBA) players" that players from the age bracket of 26 – 29 years old performs more longer and better than the younger players due of their expertise in the game.

1.2 In terms of **Gender:**

Male	16	57%
Female	8	29%
LGBTQIA+	4	14%
Total:	28	100%

On this table of demographic profile in terms of *gender* it shows how many participants had taken contribution in this study in each gender. Moreover, the researcher had found no significant impact on the *level of confidence* and *quality of performance* since all the data from survey questionnaires concludes that all respondents are performing well regardless of their respective gender, except for those who frequently absenting in classes. However, the researcher had identified that in this school year of 2024-2025 from Meycauayan National High School (**MNHS**) most of the students who enrolled for the **ICT** strand are mostly male students, and this significant information concludes that females and other genders from LGBTQIA+ should be encouraged to take Information and Communication Technology (**ICT)** in which will broaden their practical knowledge and skillset about the computers.

1.3 In terms of **Number of Days Attended in CSS class:**

0 – 60 days	6	21%
61 – 120 days	0	0%
121 – 181 days	0	0%
Perfect attendance	22	79%
Total:	28	100%

In this table that presents the demographic profile of students based on the number of their attendance in Computer System Servicing (**CSS**) class states the number of participants that had been absent and not been absent for the school year 2024-2025. And fortunately, this study had found that the number of days attending on the CSS class can significantly impact their performance pertaining to Hands-on practices depending on how many days students had attended. Additionally, according to a study by Ancheta et al., (2021) titled "Effect of class Attendance on Academic Performance" highlights that if the student absence is increasing his/her academic

Address: Camalig, City of Meycauayan, Bulacan
Telephone No. (044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

performance will gradually decrease. Similarly on a study by Sekiwu et al., (2020) titled "Investigating the relationship between school attendance and academic performance in universal primary education: The case of Uganda" states on the relevant findings of their study that an increase on school attendance will positively impact their academic performances which resembles on this research. Overall, the results from the demographic profile have found significant evidences about the several factors that might affect the performance of Grade 12 ICT on their hands-on practices.

- What is the level of confidence on Hands-on practices in Computer System Servicing among Grade 12 Information and Communication Technology Students of Meycauayan National High School?

According on the numerical results of *data analysis* pertaining to this question, it states that the *level or extent* out of 4 categories of Hands-on practices are "somewhat easy" according to the alignment of results on the likert scale on this question. And for the overall calculation of weighted average mean (**WAM**) for question number 2 on measuring the level of various Hands-on practices, the result of the calculation of the statistician are about 2.065 by rounding it off making it **2.07** which aligns on *somehow easy* on the likert scale which suggest that the level of Hands-on practices are not difficult for Grade 12 ICT, and this crucial finding of this study indicates that Grade 12 ICT students are more likely to have a positive view on different categories of Hands-on practices and also having the confidence and trust on their skills rather than doubting their skillset and technical knowledge on their field. And according to a conducted study by Kline et al., (2021) titled "Student Perspectives of Hands-On Experiential Learning's Impact on Skill Development Using Various Teaching Modalities" suggests that both physical and virtual factors improve the students' confidence in hands-on activities which can significantly increase their performance, and this significant findings on the related study resembles on the overall findings of measuring the level or extent of hands-on practices. Which suggests that if the students have a confident view and believe that it is easy for them to execute a hands-on practice, it can significantly increase their performance.

- What is the quality of performance on Hands-on practices of Grade 12 Information and Communication Technology Students that affect the Academic Performance in Computer System Servicing subject?

On the last question, the numerical data that aligns with its label on the likert scale represents *quality* and *efficiency* on the performance of Grade 12 Information and Communication Technology (**ICT**) students, and the data states that the *hardware, software,* and *network installation hands-on practices* are *efficiently* performed by the Grade 12 **ICT** students, and it suggest the fact that they are performing well on these Hands-on practices pertaining to the Computer System Servicing (**CSS**) subject. Although they had performed well on the other Hands-on practices, there are still some areas that needs to be improved, especially on the *hardware maintenance hands-on practice* in which the results states that their performance is "somehow efficient" and this significant finding suggest that Grade 12 **ICT** students should improve the efficiency of their performance on hardware maintenance hands-on practice.

Address: Camalig, City of Meycauayan, Bulacan
Telephone No. (044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

In addition, according to a study by Alhadabi & Karpinski (2020) titled "Grit, self-efficacy, achievement orientation goals, and academic performance in university students" emphasizes that having "Grit" or also known as *perseverance* and *passion* can positively affect the students to achieve academically by maintaining their consistent work and efforts, this study also states that there is a strong positive relation between grit and performance in school which is the same in this study. If Grade 12 Information and Communication Technology (**ICT**) students worked hard enough to perform well in different categories of Hands-on practices, achieving their desires academically in Computer System Servicing subject won't be an impossible task for them.

DISCUSSION

CONCLUSION

To sum up everything beyond this study, the results attained by the researcher with the support of their statistician had identified the numerical answers to conclude every significant information that this study had gathered during its progression, and it suggests that most of the students who are *males* that has already *experienced* in hands-on practices and ages between *18 – 20 years old* that find it *easier* and had *efficiency* on executing the Hands-on practices performs better on their academic performance in computer system servicing class. Moreover, based on the findings of the conducted study by Alhadabi & Karpinski (2020) titled "Grit, self-efficacy, achievement orientation goals, and academic performance in university students" highlights the students' ability to accomplish their task by exerting the consistent efforts towards their desired goals, which is similar on the conclusion of this study by putting consistent work in order to achieve their goals academically.

In conclusion, there is significant positive impact between hands-on practices and academic performance in computer system servicing class making this an accomplishment for the researcher and for this particular study.

RECOMMENDATIONS

In the course of the progression of this study, the researcher aimed to determine the several recommendations that may help the Grade 12 Information and Communication Technology students pertaining to the different varieties of their Hands-on practices. Nevertheless, these multiple recommendations from the researcher are solely based on their observations that is associated on the results and development of this study.

And what the researcher had significantly noticed that needs additional enhancements on this study are the following:

Address: Camalig, City of Meycauayan, Bulacan
Telephone No. (044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

- **FURTHER TECHNICAL ASSISTANCE:** By sustaining the technological tools and equipment needs of Grade 12 Information and Communication Technology students more effectively, their maximum potential will significantly increase. Causing to further increase his or her academic achievement in Computer System Servicing.

- **MORE ENGAGEMENT IN HANDS-ON PRACTICES:** Even most of the students find the hands-on practices somehow easy, they still should acknowledge on knowing what their strengths and weaknesses is to avoid any technological errors and accidents while doing Hand-on practices.

- **ADJUSTMENTS ON THE CURRICULUM:** The department of education (**DEPED**) need to be flexible in the modern world of rapidly improving technology, by improving the current curriculum on the Information and Communication Technology (**ICT**) track in order to prepare the Grade 12 ICT students in the technology industry.

- **FURTHER RESEARCH:** The researcher recommends that this study should be explored more in depth, and use the relevant findings on other studies in order to continue on finding the significant information that may help the future studies.

In conclusion, all of these suggestions from the researcher solely aims to address the areas of Hands-on learning and practices that students and others need to enhance. Additionally, to assist the Grade 12 ICT students on improving their technical skills and to be informed about this specific issue.

REFERENCES

Greene, R. [@RobertGreene]. (2024). THE FUTURE BELONGS TO THOSE WHO LEARN MORE SKILLS AND COMBINE THEM IN CREATIVE WAYS. [Tweet]. X. https://x.com/RobertGreene/status/1780219606214553713

Almulla, M. A. (2020). THE EFFECTIVENESS OF THE PROJECT-BASED LEARNING (PBL) APPROACH AS A WAY TO ENGAGE STUDENTS IN LEARNING. https://journals.sagepub.com/doi/full/10.1177/2158244020938702

Suleiman, B. I., Okunade, A. O., Dada, G. E., & Ezeanya, C. U. (2024). KEY FACTORS INFLUENCING STUDENTS' ACADEMIC PERFORMANCE https://jesit.springeropen.com/articles/10.1186/s43067-024-00166-w#citeas

Address: Camalig, City of Meycauayan, Bulacan
Telephone No. (044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

Chen, J. C., Huang, Y., Lin, K. Y., Chang, Y. S., Lin, H. C., Lin, C. Y., & Hsiao, H. S. (2020). DEVELOPING A HANDS-ON ACTIVITY USING VIRTUAL REALITY TO HELP STUDENTS LEARN BY DOING. https://eric.ed.gov/?id=EJ1239763

Demirhan, E., & Şahin, F. (2021). THE EFFECTS OF DIFFERENT KINDS OF HANDS-ON MODELING ACTIVITIES ON THE ACADEMIC ACHIEVEMENT, PROBLEM-SOLVING SKILLS, AND SCIENTIFIC CREATIVITY OF PROSPECTIVE SCIENCE TEACHERS. https://link.springer.com/article/10.1007/s11165-019-09874-0

Middleton, K. V. (2020). THE LONGER-TERM OF COVID-19 ON K-12 STUDENT LEARNING AND ASSESSMENT. https://onlinelibrary.wiley.com/doi/abs/10.1111/emip.12368

Ancheta, R. F., Daniel, D., & Ahmad, R. (2021). EFFECT OF CLASS ATTENDANCE ON ACADEMIC PERFORMANCE. https://oapub.org/edu/index.php/ejes/article/view/3887

Sekiwu, D., Ssempala, F., & Frances, N. (2020). INVESTIGATING THE RELATIONSHIP BETWEEN SCHOOL ATTENDANCE AND ACADEMIC PERFORMANCE IN UNIVERSAL PRIMARY EDUCATION: THE CASE OF UGANDA. https://files.eric.ed.gov/fulltext/EJ1252243.pdf

Alhadabi, A., & Karpinski, A. C. (2020). GRIT, SELF-EFFICACY, ACHIEVEMENT ORIENTATION GOALS, AND ACADEMIC ACHIEVEMENTS IN UNIVERSITY STUDENTS. https://www.tandfonline.com/doi/full/10.1080/02673843.2019.1679202#abstract

Kline, A. R., Kolegraff, S. A., & Cleary, J. P., (2021). STUDENT PERSPECTIVES OF HANDS-ON EXPERIENTIAL LEARNING'S IMPACT ON SKILL DEVELOPMENT USING VARIOUS TEACHING MODALITIES. https://eric.ed.gov/?id=ED626321

Kalén, A., Ferreirós, P. A., Costa, B. P., & Rey, E. (2020). EFFECTS OF AGE ON PHYSICAL AND TECHNICAL PERFORMANCE IN NATIONAL BASKETBALL ASSOCIATION (NBA) PLAYERS. https://www.tandfonline.com/doi/full/10.1080/15438627.2020.1809411

Address: Camalig, City of Meycauayan, Bulacan
Telephone No. (044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

APPENDICES

A. CONSENT FORM

SURVEY QUESTIONNAIRE CONSENT FORM

I am (name optional) _____ and I'm eager to contribute on this Academic Study associated on a Collaborative Research conducted by **Aldrin James A. Alciso** titled the **ASSESSING THE IMPACTS OF HANDS-ON PRACTICES ON ACADEMIC PERFORMANCE IN COMPUTER SYSTEM SERVICING AMONG GRADE 12 INFORMATION AND COMMUNICATION TECHNOLOGY STUDENTS OF MEYCAUAYAN NATIONAL HIGH SCHOOL ACADEMIC YEAR 2024-2025**.

And as a participant in this study, it is important for you to know that your privacy is our top priority and we can assure that your privacy is confidential and safe within this survey questionnaires, and based on Data Privacy Act of 2012 the processing of information is allowed to be done in a few conditions.

- The purpose of data gathering to the respondents shall be done legally and correctly.
- The privacy of the respondents must be respected by the researchers.
- The data that is provided in this survey questionnaires are only for academic purposes.

By consenting on this, you may sign the form below:

_____ _____
Respondent's Signature Date

Address: Camalig, City of Meycauayan, Bulacan
Telephone No. (044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

B. SURVEY QUESTIONNAIRE

Below are the questions that identifies the *demographic profile* and measures the *level of confidence*.

Republic of the Philippines
Department of Education
REGION III - CENTRAL LUZON
SCHOOLS DIVISION OF CITY OF MEYCAUAYAN
MEYCAUAYAN NATIONAL HIGH SCHOOL
CAMALIG, CITY OF MEYCAUAYAN, BULACAN

SURVEY QUESTIONS

INSTRUCTIONS: *Check the box that states your Demographic profile.*

1). **What is your student's profile on ICT track in terms of:**

1.1 Section: ☐ Hollerith ☐ Babbage ☐ Pascal ☐ Thompson

1.2 Gender: ☐ Male ☐ Female ☐ LGBTQIA

1.3 Age: ☐ 15 - 17 ☐ 18 - 20 ☐ 21 – above

1.4 Days attended on **CSS** class:

☐ 0 – 60 days ☐ 61 – 120 days ☐ 121 – 181 days ☐ Perfect Attendance

INSTRUCTIONS: *Check the box on the table that corresponds to your best answer.*

2). Level of Hands-on practices on CSS subject.

	Difficult	Somehow Difficult	Somehow Easy	Easy
A. Hardware Installation	**4**	**3**	**2**	**1**
1. Motherboard installation				
2. Power Supply Unit Installation				
3. Cable installation in System Unit				
4. Printer Installation				
5. AVR Installation				

Address:Camalig, City of Meycauayan, Bulacan
Telephone No.(044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

Address: Camalig, City of Meycauayan, Bulacan
Telephone No. (044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

Republic of the Philippines
Department of Education
REGION III - CENTRAL LUZON
SCHOOLS DIVISION OF CITY OF MEYCAUAYAN
MEYCAUAYAN NATIONAL HIGH SCHOOL
CAMALIG, CITY OF MEYCAUAYAN, BULACAN

2). Level of Hands-on practices on CSS subject.

	Difficult	Somehow Difficult	Somehow Easy	Easy
B. Software Installation	**4**	**3**	**2**	**1**
1. Operating System Installation				
2. Power ISO Installation				
3. RUFUS Installation				
4. Microsoft Applications Installation				
5. Google Chrome Installation				

2). Level of Hands-on practices on CSS subject.

	Difficult	Somehow Difficult	Somehow Easy	Easy
C. Network Installation	**4**	**3**	**2**	**1**
1. Ethernet Cable Installation				
2. Peer to Peer Network Installation				
3. Client/Server Network Installation				
4. IP Address Configuration				
5. Router Configuration				

Address:Camalig, City of Meycauayan, Bulacan
Telephone No.(044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

Address: Camalig, City of Meycauayan, Bulacan
Telephone No. (044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

Below are the questions that measures the *quality of performance on hands-on practices.*

Republic of the Philippines
Department of Education
REGION III - CENTRAL LUZON
SCHOOLS DIVISION OF CITY OF MEYCAUAYAN
MEYCAUAYAN NATIONAL HIGH SCHOOL
CAMALIG, CITY OF MEYCAUAYAN, BULACAN

2. Cleaning Cloth				
3. Multimeter				
4. Zip Ties				
5. Screw Driver				

4). Efficiency of your performance in different categories of Hands-on Practices.

	Efficient	Somehow Efficient	Somehow Inefficient	Inefficient
A. Hardware Installation	**4**	**3**	**2**	**1**
1. Motherboard installation				
2. Power Supply Unit Installation				
3. Cable installation in System Unit				
4. Printer Installation				
5. AVR Installation				

4). Efficiency of your performance in different categories of Hands-on Practices.

	Efficient	Somehow Efficient	Somehow Inefficient	Inefficient
B. Software Installation	**4**	**3**	**2**	**1**
1. Operating System Installation				
2. Power ISO Installation				
3. RUFUS Installation				
4. Microsoft Applications Installation				

Address:Camalig, City of Meycauayan, Bulacan
Telephone No.(044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

Address: Camalig, City of Meycauayan, Bulacan
Telephone No. (044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph

Republic of the Philippines
Department of Education
REGION III - CENTRAL LUZON
SCHOOLS DIVISION OF CITY OF MEYCAUAYAN
MEYCAUAYAN NATIONAL HIGH SCHOOL
CAMALIG, CITY OF MEYCAUAYAN, BULACAN

5. Google Chrome Installation				

4). Efficiency of your performance in different categories of Hands-on Practices.

	Efficient	Somehow Efficient	Somehow Inefficient	Inefficient
C. Network Installation	**4**	**3**	**2**	**1**
1. Ethernet Cable Installation				
2. Peer to Peer Network Installation				
3. Client/Server Network Installation				
4. IP Address Configuration				
5. Router Configuration				

4). Efficiency of your performance in different categories of Hands-on Practices.

	Efficient	Somehow Efficient	Somehow Inefficient	Inefficient
D. Hardware Maintenance	**4**	**3**	**2**	**1**
1. Hardware Troubleshooting				
2. Cleaning Computer Components				
3. Re-cabling Damaged Cables				

C. CURRICULUM VITAE

Republic of the Philippines
Department of Education
REGION III - CENTRAL LUZON
SCHOOLS DIVISION OF THE CITY OF MEYCAUAYAN
MEYCAUAYAN NATIONAL HIGH SCHOOL
CAMALIG, CITY OF MEYCAUAYAN, BULACAN

Alciso, Aldrin James A.
Ambrosio St, Sitio Dos Bahaypare, Meycauayan City
+69 9692118669
Aldrinalciso@gmail.com

EDUCATIONAL BACKGROUND
Primarily School: Bahaypare Elementary School (2013-2019)

Secondary - Junior High School: Meycauayan National High School (2019- 2022)
Grade 10 with Honor

Secondary - Senior High School: Meycauayan National High School (2024-present)
Information and Communication Technology
Grade 11 & 12 - with Honor

REFERENCES

Elger David	**Jherald Esteban**
Teacher III - MNHS	**Teacher II - MNHS**
09255092909	**09062750007**

I hereby certify that the information above is truthful.

Signature of the Researcher above Printed Name

Address: Camalig, City of Meycauayan, Bulacan
Telephone No. (044)913-0664
Email Address:meycauayannhs@gmail.com/300757.meyc@deped.gov.ph