



## Addressing the quality of higher education among the pandemic in Nueva Ecija, Philippines through the establishment of the community e-learning resource center

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### Abstract

The Community E-learning Resource Center (CeLRC) has enabled faculty members and students to have access to the online facility at higher education institutions in collaboration with the Local Government Units (LGUs) and the Department of Information and Communications Technology (DICT) Tech4Ed centers available in the area. It specifically targets students and faculty members who do not have access to the internet or information and communications technology (ICT) devices such as computer desktops, laptops, tablets and smartphones that support online classes. This study assessed and evaluated the three newly established Community e-Learning Resource Centers in three municipalities in Nueva Ecija, San Isidro, Papaya and Penaranda. A researcher constructed questionnaire and quantitative research design are used. Results showed that the facilities found in three community e-Learning resource centers are safe, secure, functional in every aspect, highly acceptable and comfortable to use. The CeLRC staff is competent and shows a strong sense of interpersonal skills. It is recommended that the results of this study be used by the CeLRC managers to improve the services of the center to ensure its viability, efficacy and efficiency.

**Keywords:** Assessment and evaluation, Community resource center, Facilities, manager and staff, Information and communications technology.

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### **Contribution of this paper to the literature**

The results of this study can be used as a foundation by the researchers to review and evaluate other agencies and institutions that offer the same nature of services. The outcomes can also be used as a reference by the CeLRC managers to enhance the center's long-term viability, efficacy and efficiency.

## **1. Introduction**

The World Health Organization (WHO) declared the COVID-19 pandemic on 11 March 2020 (Arora et al., 2020; Cucinotta & Vanelli, 2020; Mahase, 2020; Sanyaolu et al., 2022) as a result of the significant increase in the transmission of the Corona Virus in the first quarter of 2020. This has brought the entire world into chaos and affected all types of businesses (tourism, medical, manufacturing, service and retail), cultural and social practices, education and governance. The education sector is one of the sectors that has been drastically impacted by the pandemic. In the Philippines, classes at all levels were suspended when President Rodrigo Roa Duterte put the whole country on enhanced community quarantine on 17 March 2020 closing all establishments and restricting the movement of all citizens especially aged people (above 60 and below 21 years) to minimize the spread of the virus.

During these times, classes were either towards the end of the term for those still implementing the old academic calendar or in the mid of the school term for those who had shifted to the new academic calendar. All schools from basic education to post-graduate education were halted to ensure the safety of students and teaching and non-teaching staff.

In the Philippines, most schools worldwide are reconstructing and adjusting to new and challenging situations that are putting the traditional learning process of human interaction in the classroom and leading to virtual and online education (Cuaton, 2020). COVID-19 has impacted the education sector (Gurme, 2019). The Commission on Higher Education (CHED) issued COVID-19 advisories which serve as guidelines for all higher education institutions to mitigate the impact of the pandemic on higher education (Cuaton, 2020). One of the strategies is to move education online (Alegre & Berbegal-Mirabent, 2021; Pangket, 2023). It was stated that online education would be mainstreamed by 2025 (Palvia et al., 2018).

However, the pandemic seems to fast-tracked its course. The sudden implementation of online education is an alternative mode of instruction with the aid of the internet or any online strategy (Parentela & Vargas, 2021). According to Glazier, Hamann, Pollock, and Wilson (2020), this mode of instruction has the advantages of flexibility, information accessibility, global reach, equity, innovation and efficiency while at the same time ensuring safety from the virus.

However, findings show that the majority of students and some faculty members do not have adequate educational resources to support online classes. Zilka, Finkelstein, Cohen, and Rahimi (2021) mentioned that students have limited access, difficulties and malfunctions resulting from a weak connection to the internet especially during synchronous lectures.

To address the issues and challenges faced by students and faculty members in terms of internet connectivity, limited access to devices and the need to reach out to students with travel restrictions as dictated by the community quarantine protocols, the Nueva Ecija University of Science and Technology through collaboration with the Local Government Units (LGUs), Internet Service Providers (ISPs), Commission on Higher Education Region III (CHEDRO-III), Department of Information and Communications Technology Region III (DICT-III), Department of Local and Interior Government Region III (DILG-III) and private agencies or professional organizations or industry associations and other non-government agencies established a community learning center.

This project will address the quality of education without the need to travel to school and mingle with others. According to Saepudin, Sulistiono, and Rindiani (2021), a model design of Community Learning Centers (CLC) management shows effective results in increasing the knowledge, attitudes and skills of community members. According to research by Kay (2021), learning resource centres are advantageous to students by enhancing their educational process.

The Community e-Learning Resource Centers (CeLRC) are equipped with internet connectivity devices such as computer desktops, laptops, tablets, web cameras, headsets and microphones for video conferencing, physical and online storage devices, printing and scanning devices, licensed software or applications to support online classes and a seating facility that is compliant with physical distancing requirements and safety protocols. It also has learning materials (print and non-print textbooks and reference materials), health and safety items (e.g. face masks, face shields, ethyl alcohol, acrylic dividers, disinfection foot mats, disinfection and cleaning materials etc.) and facilities to ensure the safety and security of the CeLRCs (e.g. CCTV, padlocks, chains, bolts, etc.). The project also mobilized manpower through a community program with parents and members of the community that catered to the concerns of the centre's clients.

The main objective of this study is to assess and evaluate the three established community e-learning resource centres in three municipalities in Nueva Ecija; San Isidro, Papaya and Penaranda. Specifically, it intends to describe the profile of the respondents, assess their utilization and evaluate the services provided.

## **2. Methodology**

Along with the quantitative research design, the researcher used sampling collected from respondents' responses. Quantitative research design investigates phenomena systematically by collecting quantifiable data and employing statistical, mathematical or computer methods. Furthermore, it collects data from current and potential customers by using sampling techniques and sending out online questionnaires, polls, surveys and so on that can be represented numerically (QuestionPro Survey Software, 2022).

The study's respondents included 138 individuals from the CeLRC of Penaranda, 14 individuals from the CeLRC of San Isidro and 64 individuals from the CeLRC of Papaya for the year 2021. A self-developed questionnaire was also used which was attested to for reliability. Part 1 is a profile of the respondents in terms of age, gender, civil status and respondent category. Part 2 is a CeLRC utilization assessment which includes the

frequency of visits in the three (3) CeLRCs, length of stay, purpose of visit and acquisition of CeLRC services and part 3 is a service evaluation of the CeLRC in terms of the quality of its facilities, competency and interpersonal skills of staff and client satisfaction. The collected data was tallied, tabulated and interpreted using frequency, percentage, weighted mean and average weighted mean on a four-point Likert scale and a five-point evaluation scale.

**Table 1. Four-point Likert scale.**

Point	Scale range	Description
4	4.00 - 3.00	Strongly agree
3	2.99 - 2.00	Agree
2	1.99 - 1.00	Disagree
1	0.99 – Below	Strongly disagree

Table 1 presents the four-point Likert scale from 1-5 (strongly disagree to strongly agree). It is used to rank the level of agreement in assessing the quality of CeLRC facilities and evaluating the competency and interpersonal skills of CeLRC staff with an indicator. According to Chang (1993), a four-point Likert scale has better psychometric properties than a six-point scale.

**Table 2. Five-point Likert scale.**

Point	Scale range	Equivalent client satisfaction	Verbal interpretation
5	4.20-5.00	Very satisfied	Excellent
4	3.40-4.19	Satisfied	Very satisfactory
3	2.60-3.39	Fairly satisfied	Satisfactory
2	1.80-2.59	Dissatisfied	Needs improvement
1	1.00-1.79	Very dissatisfied	Poor

Table 2 presents the Five (5)-point Likert scale with a verbal interpretation ranging from 1-5 (poor to excellent) to evaluate the client satisfaction of the clientele that used the three (3) Community e-Learning Resource Centers. Meric (1994) emphasized that Likert-type scale form has an advantage in reducing leniency on satisfaction measurements.

### 3. Results

#### 3.1. Profile of the Clients

Table 3 shows the distribution of clients from the three (3) CeLRCs in terms of age. It can be noted that the majority of the clients are from the CeLRC of Penaranda with 33.33% or 138 of the total clients and 53 of it has an age between 16 to 20. It is then followed by the clients from the CeLRC of Papaya with 64 total clients or 42.67 % of the total clients.

It can also be seen that 24.00 % or 36 clients from CeLRC Papaya have an age between 21 to 25. Clients from CeLRC San Isidro only comprise 9.33% or 14 out of 150 total clients with a majority of ages between 21 to 25. Based on the data obtained, we can infer that the majority of the clients who made use of or used the CeLRC are individuals whose ages are between 16 to 20 and between 21 to 25. This also implies that respondents belonging to this age group have needs in line with internet access and computer use. Further implications would mean that the greatest number of the clientele from Penaranda made use of their CeLRC in comparison to the CeLRC from Papaya and San Isidro.

**Table 3. Distribution of clients per CeLRC in terms of age.**

Age range	Papaya		Penaranda		San Isidro		Total	
	f	%	F	%	f	%	f	%
11-15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16-20	22.00	10.19	119.00	55.09	3.00	1.39	144.00	66.67
21-25	36.00	16.67	13.00	6.02	5.00	2.31	54.00	25.00
26-30	6.00	2.78	6.00	2.78	4.00	1.85	16.00	7.41
31-35	0.00	0.00	0.00	0.00	2.00	0.93	2.00	0.93
Total	64.00	29.63	138.00	63.89	14.00	6.48	216.00	100.00

**Table 4. Distribution of clients per CeLRC in terms of gender.**

Gender	Papaya		Penaranda		San Isidro		Total	
	F	%	F	%	f	%	F	%
Male	16.00	10.67	40.00	26.67	7.00	4.67	58.00	38.67
Female	48.00	32.00	29.00	19.33	7.00	4.67	89.00	59.33
PNTS	0.00	0.00	3.00	2.00	0.00	0.00	3.00	2.00
Total	64.00	42.67	72.00	48.00	14.00	9.33	150.00	100.00

Table 4 shows the distribution of clients from the three (3) CeLRCs in terms of gender. It can be noted that out of 150 clients, the majority (89 or 59.33 %) are female followed by 58 or 38.67 % that are male. Only 3 clients or 2% prefer not to disclose their gender.

We can also observe from the table that there are larger female clients who made use of the CeLRC in Papaya and San Isidro while in CeLRC Penaranda, there is more male clients than female clients who used their CeLRC. In research conducted by Lee et al. (2019), male generally have more positive attitudes towards computers than females. However, the gender difference decreases with age.

**Table 5.** Distribution of clients per CeLRC in terms of civil status.

Civil status	Papaya		Penaranda		San Isidro		Total	
	f	%	F	%	f	%	f	%
Married	3.00	2.00	4.00	2.67	3.00	2.00	10.00	6.67
Never married	60.00	40.00	68.00	45.33	9.00	6.00	137.00	91.33
Separated	1.00	0.67	0.00	0.00	2.00	1.33	3.00	2.00
Divorced	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Widowed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	64.00	42.67	72.00	48.00	14.00	9.33	150.00	100.00

Table 5 shows the distribution of clients from the three (3) CeLRCs in terms of civil status. It can be observed that the majority of the clients or 91.33 % have never married while only 10 or 6.67 % are married and only 3 or 2% of the clients are separated. None of the clients are divorced or widowed. This finding implies that more than 90 % of the clients are single.

**Table 6.** Distribution of clients per CeLRC in terms of their category.

Respondent's category	Papaya		Penaranda		San Isidro		Total	
	f	%	f	%	f	%	F	%
High school student	8.00	5.33	3.00	2.00	2.00	1.33	13.00	8.67
College student	48.00	32.00	57.00	38.00	4.00	2.67	109.00	72.67
Working student	7.00	4.67	9.00	6.00	5.00	3.33	21.00	14.00
Graduate student	1.00	0.67	2.00	1.33	0.00	0.00	3.00	2.00
Working parent	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Professional	0.00	0.00	1.00	0.67	3.00	2.00	4.00	2.67
Total	64.00	42.67	72.00	47.33	14.00	7.33	150.00	97.33

Table 6 shows the distribution of clients according to their category. It can be gleaned from the table that the majority of the clients are full-time college students 109 or 72.67% followed by students who are working part-time 21 or 14.00% and high school students 13 or 8.67%. This finding implies that the three (3) CeLRCs help students in Papaya, Penaranda, and San Isidro which is true to the aim of the CeLRC project to address the issues and challenges faced by students in terms of internet connectivity, limited access to devices and the need to reach out to students with travel restrictions as dictated by the community quarantine protocols.

**Table 7.** Length of stay of the clients at the CeLRC.

Length of stay at CeLRC	Papaya		Penaranda		San Isidro		Total	
	F	%	f	%	f	%	f	%
Less than one (1) hour	31.00	20.67	36.00	24.00	5.00	3.33	72.00	48.00
1 Hour - 1.9 hours	24.00	16.00	30.00	20.00	9.00	6.00	63.00	42.00
2 Hours - 2.9 hours	6.00	4.00	3.00	2.00	0.00	0.00	9.00	6.00
3 Hours - 3.9 hours	1.00	0.67	2.00	1.33	0.00	0.00	3.00	2.00
More than 4 hours	2.00	1.33	1.00	0.67	0.00	0.00	3.00	2.00
Total	64.00	42.67	72.00	48.00	9.33	150.00	150.00	100.00

### 3.2. CeLRC Utilization Assessment

Table 7 shows the length of stay (per hour) of the clients at the CeLRC. It can be seen from the table that the majority of the three (3) CeLRCs stayed for less than an hour with a total of 72 clients or 48.00 % followed by 63 or 42 % of the clients with a 1 hour to 1.9 hours stay at the CeLRC while the remaining 10 -15% stayed for more than 3 hours. It is not surprising that most of the users of the CeLRC stayed only for less than an hour. It may have been the threat from the virus that made them leave early. On the other hand, the length of stay at the center may be an indicator that the respondents were able to receive or finish their work faster using the facilities. Nonetheless, the length of stay depends on the service they will get for free from the CeLRC.

Figure 1 illustrates that the main purpose of visiting the CeLRC for the majority of the clients is to browse the internet. In a report by Matikas (2014) of Inquirer.net, the Philippines despite being regarded as the social media capital of the world has the slowest internet speed in the entire southeast Asian region and is ranked 158th out of 190 countries worldwide.

The CeLRC is equipped with high-speed internet around 100mbps which is faster in comparison with most connections at home as well as with the use of data. There is a possibility that they will turn to the centre for their internet needs. Secondly, free document and paper printing is available at the centre to meet the demands of the clients. This is quite beneficial for students who do not have enough money to print educational materials. The center has an installed program for document editing, spreadsheet editing, presentation editing, visual editing and video editing. It can be noted from the results that some of the students are using the computers and laptops found at the center to finish work with these editing features.

Due to the limitations brought about by the COVID-19 pandemic, the mode of access to the services of CeLRC was largely based on the availability of the clients. Figure 2 shows that even though there is a threat of a pandemic, most of the clients opted to visit the center personally. This implies that the needs of the clients are urgent and although there is a given schedule and one can make an online appointment, they still visit it based on their availability.

In addition, it can be seen from the graph that the second majority of the center's clients are on a given schedule. Even though the center is open to all the citizens of the municipality of San Isidro, it can only cater to certain clients. Thus, the need to set up a given schedule for each barangay is necessary. It can also be noted that the least number of clients have the capacity of having an online appointment and schedule their visit in advance.

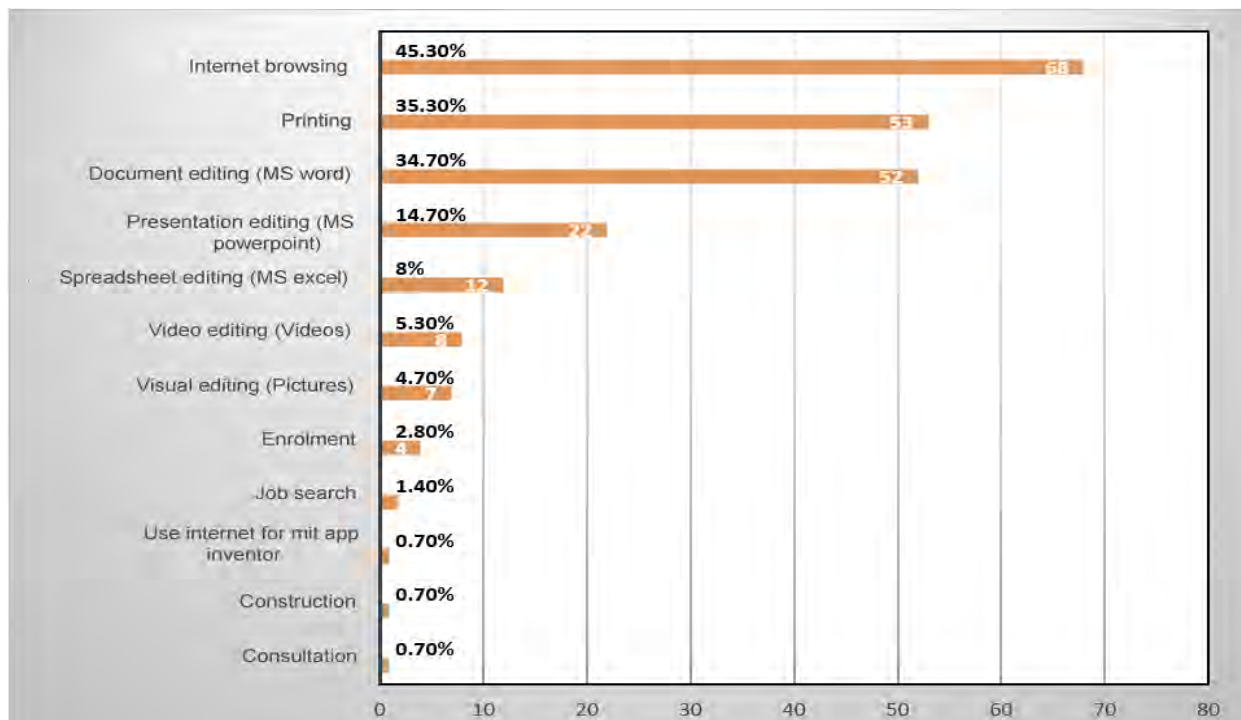


Figure 1. Purpose of visit at the CeLRC.

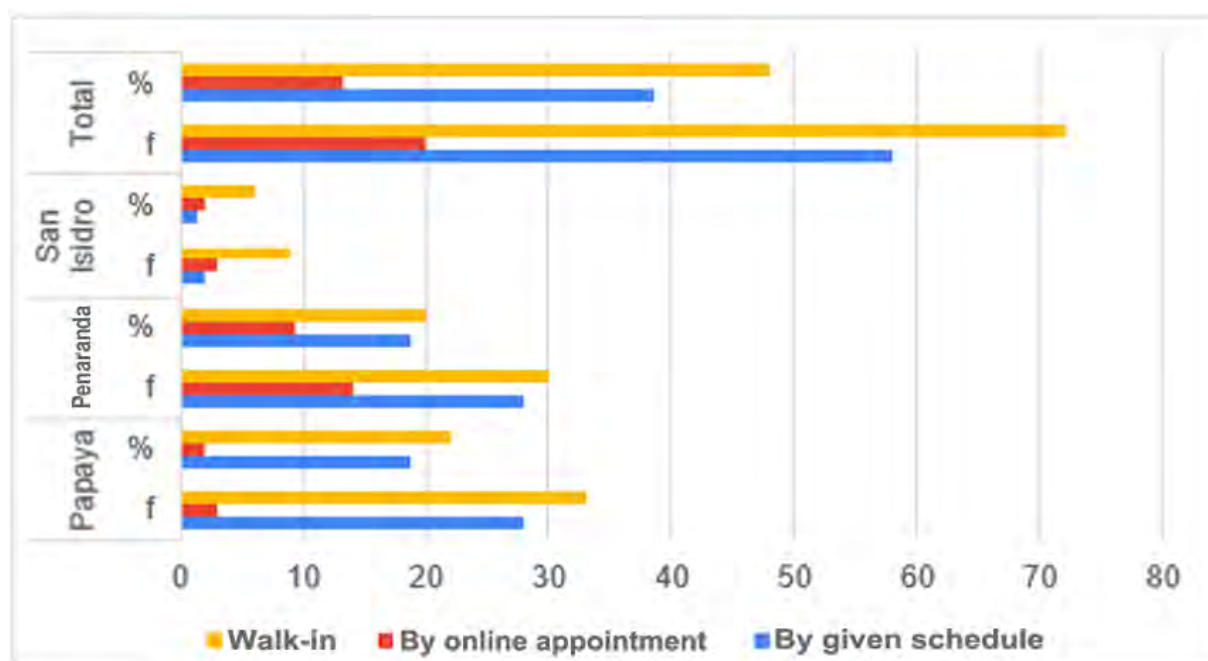


Figure 2. Presents the mode of access to the services of the CeLRC.

Table 8. Quality of CeLRC facilities.

Indicators	Papaya	Penaranda	San Isidro	Grand mean	Description
1. Overall satisfaction with CeLRC facilities	3.05	2.64	3.29	2.99	Agree
2. CeLRC facilities are safe and secure.	3.17	2.81	3.50	3.16	Strongly agree
3. CeLRC facilities are functional.	3.05	2.71	3.43	3.06	Strongly agree
4. CeLRC facilities are comfortable to use.	3.17	2.86	3.43	3.15	Strongly agree
5. CeLRC provides a thoroughly suitable environment.	3.16	2.78	3.36	3.10	Strongly agree
6. The CeLRC room is clean and well-organized.	3.14	2.85	3.36	3.12	Strongly agree
7. The CeLRC room has adequate space and is air-conditioned.	3.22	2.79	3.07	3.03	Strongly agree
8. The CeLRC room is accessible.	3.14	2.78	3.43	3.12	Strongly agree
Average	3.14	2.78	3.36	3.09	Strongly agree

Table 8 shows the quality of CeLRC facilities. It can be seen from the table that the clients from the three (3) CeLRC centers acknowledged overall satisfaction with the center facilities. They strongly agree that all the facilities included in the centers are safe and secure, functional in every aspect and comfortable to use. An effective facility is responsive to the needs of its users and at a minimum should provide a physical environment that is comfortable, safe, secure, accessible, well-illuminated, well-ventilated and aesthetically pleasing (Lawrence, 2023). The table above also shows that the area surrounding the center is suitable which implies that the location of the center is free from any pollution (e.g. noise) that may distract the concentration of the clients while using the facilities of the center. The room is clean and well-organized, air-conditioned and easily accessible. This implies that the CeLRC centers in three municipalities are suitable to be used by clients. Providing a clean environment

helps maintain the well-being of employees. A workplace where litter and waste are free results in improved overall productivity ([Why is Cleanliness Important in the Workplace? | AJ Products, 2022](#)).

**Table 9.** Competency and interpersonal skills of CeLRC staff.

Indicators	Papaya	Penaranda	San Isidro	Grand mean	Description
1. The CeLRC manager or staff is knowledgeable about the computer system and program.	3.03	2.79	3.29	3.04	Strongly agree
2. The CeLRC manager or staff is equipped with the skills to perform computer-related tasks.	2.94	2.76	3.36	3.02	Strongly agree
3. The CeLRC manager or staff is updated with the current trends in IT.	3.11	2.85	3.43	3.13	Strongly agree
4. The CeLRC manager or staff is friendly by nature.	3.06	2.83	3.29	3.06	Strongly agree
5. The CeLRC manager or staff is hospitable.	3.09	2.88	3.43	3.13	Strongly agree
6. The CeLRC manager or staff is respectful.	3.03	2.74	3.43	3.07	Strongly agree
7. The CeLRC manager or staff is available and present.	3.08	2.90	3.50	3.16	Strongly agree
8. The CeLRC manager or staff are helpful.	3.13	2.86	3.50	3.16	Strongly agree
9. The CeLRC manager or staff is approachable.	3.08	2.78	3.43	3.10	Strongly agree
10. The CeLRC manager or staff has a positive attitude.	3.08	2.81	3.43	3.11	Strongly agree
Average	3.06	2.82	3.41	3.10	Strongly agree

Table 9 shows the quality of CeLRC staff in terms of competency and interpersonal skills. It can be noted that the clients perceived the staff to be knowledgeable about the computer system and program. They are also equipped with the skills for performing computer-related tasks and are always updated with the current trends in Information technology (IT). It is not surprising to have this result because, before the inauguration of the center, the Nueva Ecija University of Science and Technology (NEUST) under the management of the Research, Extension and Training (RET) team conducted training to equip the CeLRC staff and managers on how to be efficient and effective with their work at the center. It can also be seen from the table that the CeLRC staff and managers in terms of interpersonal relationships with the clients are friendly, hospitable, respectful, helpful, approachable, have a positive attitude and are always available. Interpersonal skills are important for communicating and working with groups and individuals in personal and professional lives. People with strong interpersonal skills tend to build good relationships and can work well with others. They understand family, friends, co-workers and clients well. People often enjoy working with colleagues who have good interpersonal skills. In addition, [Hardjati and Febrianita \(2019\)](#) found that the interpersonal communication skills of educational staff is important in enhancing service provision.

**Table 10.** Client satisfaction.

Indicators	Papaya	Penaranda	San Isidro	Grand mean	Description
1. Are you satisfied with our services?	3.56	2.99	3.71	3.42	Satisfied
2. How would you rate our level of quality?	3.53	3.00	3.86	3.46	Satisfied
3. Are the service providers competent enough to address your needs?	3.55	2.96	3.71	3.41	Satisfied
4. Are the service providers courteous and respectful in the manner in which they provide their services?	3.55	3.04	3.93	3.51	Satisfied
5. Are the services rendered accurate and appropriate to your needs?	3.56	2.94	3.86	3.45	Satisfied
6. Are the services delivered on time?	3.52	2.97	3.79	3.43	Satisfied
7. Are the tools, equipment and materials used appropriately for your needs?	3.53	3.01	3.79	3.44	Satisfied
8. Have the services rendered provided a valuable contribution to your business or organization?	3.56	3.01	3.79	3.45	Satisfied
9. How would you rate our overall performance?	3.59	3.10	3.86	3.52	Satisfied
Average	3.55	3.00	3.81	3.45	Very satisfactory

Customer or client satisfaction (also known as CSAT) is a measure of how satisfied (or dissatisfied) customers are with a company's products, services or experience. Customer or client satisfaction is defined as a customer's or client's perception of the quality, value and expectations of your company and what you provide. Table 10 shows the result for client satisfaction with the CeLRC. It can be seen from the table that the clients rated the services provided by the centers as "very satisfactory." This implies that the clients are satisfied with a particular interaction or overall experience they received. Furthermore, it can be implied that the CeLRCs are capable, competent,

accurate and appropriate in addressing their needs. The same is true of the tools, materials and services provided by the center.

#### 4. Conclusion and Recommendations

Among the three (3) CeLRCs, the CeLRC of Penaranda has the most clients followed by the CeLRC of Papaya and San Isidro which have the least number of clients. The majority of the CeLRC clients are female, unmarried and full-time college students. With regards to the CeLRC utilization, the majority of the clients stayed for less than an hour to browse the internet. It can also be concluded that the three (3) facilities found are safe, secure, functional in every aspect and comfortable to use. Thus, gaining overall satisfaction among the clients. In addition, the CeLRC staff is competent in computer systems and programs, has skills in performing computer-related tasks and is constantly updated. Furthermore, the CeLRC staff shows a strong sense of interpersonal skills that are important for communicating and working with groups and individuals especially with the clients of CeLRC. Lastly, the clients of the three (3) CeLRCs have rated the center “very satisfactory”. This rating has a very good connotation that the 3 centers are highly acceptable and reflects the usefulness of the center in meeting the needs of the clients during the COVID-19 pandemic. Based on the results of the study, it is hereby recommended that proper dissemination of the existence of CeLRCs to the community be done in the municipalities of Papaya and San Isidro to maximize the utilization of their centers. It is further recommended that more CeLRCs be built in each of the barangays of Penaranda, Papaya and San Isidro to reach clients from the far-flung areas. It is also suggested that more facilities be installed to cater to more clients from the communities of Penaranda, Papaya and San Isidro. Lastly, additional support through training and capacity building to further improve the services being provided is also recommended. Specifically, in addressing and dealing with the questions, queries and current needs of the clients while using the center.

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