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Empowering High School Teachers with Computer Systems and Networking through Skills-Training in the Case of Supang National High School, Philippines

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Abstract: This study explored the effectives of conducting a computer training designed to improve the skills of teachers in the field of ICT specifically in Computer Systems Servicing. The challenge of limited access to skills training for teachers in ICT subject motivated the researchers to conduct a Community Extension Service to Supang National High School that covers the topic on Computer Services and Network for 8 hours proficiency training. A Significant Improvement in the participants' knowledge and skills revealed after the Pre and Post Training assessments. Initially, 36 of the 54 participants demonstrated no prior knowledge or skills in CSS and after the training, none of the participants remain at this initial level, with all achieving higher scores on the post-training assessment especially 29 of the 54 participants have acquired a lot of knowledge and skills. This training demonstrates the effectiveness of targeted professional development in addressing the skills gap among ICT teachers and has the potential to improve the quality of CSS instruction and enhance student learning outcomes.

Keywords: basic computer; network; skills development; system servicing;

1. INTRODUCTION

Supang National High School recognizes the critical role that technology plays in modern education. As such, implementing CSS NC II computer training for teachers is a strategic initiative aimed at enhancing their professional development (Abella & Rosa, 2023; Javier, 2022) and improving the overall quality of education provided to the learners. The following are the key reasons underlying the rationale for offering CSS NC II computer training to Supang National High School teachers: Rapid Technological Advancement, Skill Gap in the Workforce, Career Advancement and Employability, Supporting Business Operations, Promoting Lifelong Learning, Meeting Certification Requirements, Adaptability to Market Changes, Economic Growth and Development, Enhancing Problem-Solving Capabilities, and Promoting Security Awareness.

Guimaras State University (GSU) being the only state university in the province of Guimaras carries a significant responsibility in catering to the educational and developmental needs of the local community. GSU's community extension services in computer training serve as a mechanism for capacity building(Paje, Rogayan, and Dantic 2021). By empowering local residents with computer skills, Forca et al. (2024) notes that GSU contributes to building a skilled workforce. It can support the technological needs of the province (Lapuz, 2023). The Schools Division of Guimaras operates within the framework of national education policies and guidelines set by the DepEd. Its aim is to provide quality education that is accessible, inclusive, and responsive to the needs of the community, ultimately contributing to the holistic development of learners in Guimaras province.

"Computer Systems Servicing (CSS NC II) Training: A Community Development Extension Program" is a professional development program designed to enhance teachers' capacity to effectively integrate technology into their teaching practices in line with Technical Education and Skills Development Authority standards of competencies. The DepEd teachers in Guimaras in teaching TLE has difficulty in teaching ICT subjects especially in teaching Computer Systems Servicing (CSS)(University of Perpetual Help n.d.) specialized subjects. With this training, it will cover the basic and common competencies in addition to the core competencies such as to install and configure computers systems, set-up computer networks and servers and to maintain and repair computer systems and networks (Ventayen, 2018).

This training is a preparation for them to be a certified TESDA National Certificate Holder or NC II. Extension training in computer systems servicing is designed to enhance and update the skills of individuals in maintaining and repairing computer systems. This type of training typically includes both theoretical knowledge and hands-on practical experience.

2. METHOD

This training involved five-core components the involves both the Guimaras State University-College of Science and Technology Faculty Extensionists and Supang National High School as beneficiary for this training-workshop. Figure 1 presents the panorama on the conduct of this Community Extension Service. The

Community Service commenced with Planning (FGD), then Training Expectation Setting, Monitoring, Evaluation and lastly-Replanning (Nyumba et al., 2018; Urbancová et al., 2021).

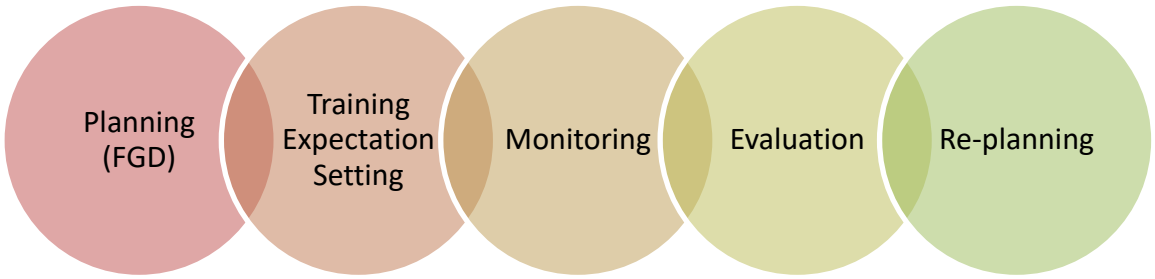

Figure 1. Process Model on the Conduct of the Computer System Servicing Training

2.1. Planning (FGD)

- Meeting with the school principal and teachers of Supang National High School
- Conduct surveys or interviews to gather information on specific communication challenges they face.
- Design a training that covers essential of Computer Systems Servicing (CSS).
- Incorporate exercises and hands-on activities to reinforce learning.
- Divide the workshop into manageable sessions, considering the participants' time constraints.
- Implement the Computer Systems Servicing (CSS NC II) Training
- Evaluate the overall success of the community extension activity based on the defined objectives.
- Gather feedback from participants, trainers, and any stakeholders involved.

2.2. Training Expectation

- The expected output from extension training in computer systems servicing includes both tangible and intangible outcomes that demonstrate the acquisition of skills, knowledge, and competencies on computer systems and its components, networking and cybersecurity.
- By achieving these outputs, participants in extension training programs for computer systems servicing will be equipped with the necessary skills and knowledge to excel in their roles, provide effective service, and continue growing in their careers.

- Generally the Objective is to equip participants with the proficiency in Computer Systems Servicing (CSS NC II) Training is to provide teachers with the necessary knowledge, skills, attitude and resources to effectively integrate technology into their teaching practices. Hence, this training seeks to:
    a. Define what a computer system is and explain its purpose.
    b. Identify different types of computer systems (e.g., desktops, laptops, servers).
    c. List and describe the functions of major hardware components (CPU, RAM, motherboard, storage devices, power supply, peripherals).
    d. Define networking and explain its importance in computer systems.
    e. Identify and describe the functions of networking hardware (routers, switches, hubs, network interface cards).
    f. Define cybersecurity and explain its importance in protecting computer systems and data.
    g. Understand the principles of confidentiality, integrity, and availability (CIA triad).

2.3 Monitoring, Evaluation, and Re-planning

Monitoring, Evaluation, and Re-planning are crucial components of any community extension activity to ensure its effectiveness and continuous improvement. To monitor and evaluate the progress of the project, we will develop a plan that will include post-assessment surveys and adapts the Likert Scale (Jebb, Ng, and Tay 2021) with the verbal description as illustrated in **Table 1**. The score value of **1** is the lowest and **5** is the highest score value, focus group discussions, and regular review meetings with school personnel of the Supang National High School. Focus group discussions will be conducted to gain feedback on the program effectiveness, and we held regular review meetings to track progress towards our objectives. These processes ensure that the training program is effective, aligns with industry standards, and adapts to the changing needs of learners and technological advancements.

Table 1. Rating Scale and Verbal Description

Score	Verbal Description
1	No knowledge or skills
2	Lack of knowledge or skills
3	Some knowledge or skills

4	Fair knowledge or skills
5	A lot of knowledge or skills

3. RESULT AND DISCUSSION

The Community Extension Program aimed to enhance the technical skills of students and community members in computer systems servicing. The training was held on May 21, 2024, at Supang National High School with 54 Teaching and Non-Teaching Personnel as participants for 8 hours. This training provides participants with both theoretical knowledge and practical experience necessary to excel in Computer Systems Servicing NC II certification. Two certified trainers in Computer Systems Servicing namely Dr. Lea P. Ymalay and Dr. Rodney N. Martires served as Resource Speakers.

Figure 2. Dr. Lea Ymalay Discussing the Basics of Computer Systems

Figure 2 shows the First Resource Person Dr. Lea P. Ymalay discussing the topics on Basics of computer systems, identification of components, and understanding their functions, Fundamentals of networking, setting up network configurations, and basics of cybersecurity while Figure 3 presents the discussion of the Second Resource Person. Dr. Rodney Martires discussing the topics on Overview of the training regulations for CSS NC II, Requirements and competencies needed for certification and Assessment and certification process. At the end of the training sessions, a photo opportunity was held to capture the

memorable event. Trainers and participants gathered together for a group photo to commemorate their successful completion of the training program.

Figure 3. Dr. Rodney Martires Discussing the CSS NC II

The Training was evaluated using the standard Self-Assessment instrument of the Community Extension Services before the activity is implemented as illustrated in Figure 5 using Sankey Graph (Otto et al. 2022). Benchmarking on the Table 1, on the left side of the illustration coded B1 represents Before the Activity with the score of 1 until B5 representing Before the Activity with the score of 5. Result shows the 54 participants have actively participated as shown in Figure 4. Before the activity 36 out of 54 participants rated themselves to have **No knowledge or skills** and its is notable the 0 or None of the remaining participants rated themselves to have **Fair knowledge or skills** nor **A lot of knowledge or skills**.

Figure 4. CST Faculty Extensionists with Supang NHS Participants

However, after the conduct of the Computer Systems and Networking, on the right side of Figure 5 coded with A to represent After the Activity where 1 is the lowest score that can be interpreted as No Skills or Knowledge and 5 is the highest score that can be described with a lot of knowledge or skills, 0 or none of 54 participants, rated themselves to settle in scores 1 or 2 which highlights a significant improvement after the training. Moreover, 29 out of 54 participants rated themselves to have **A lot of knowledge or skills** while 13 out of 54 rated themselves acquired **Fair knowledge or skills**. These results significantly presents

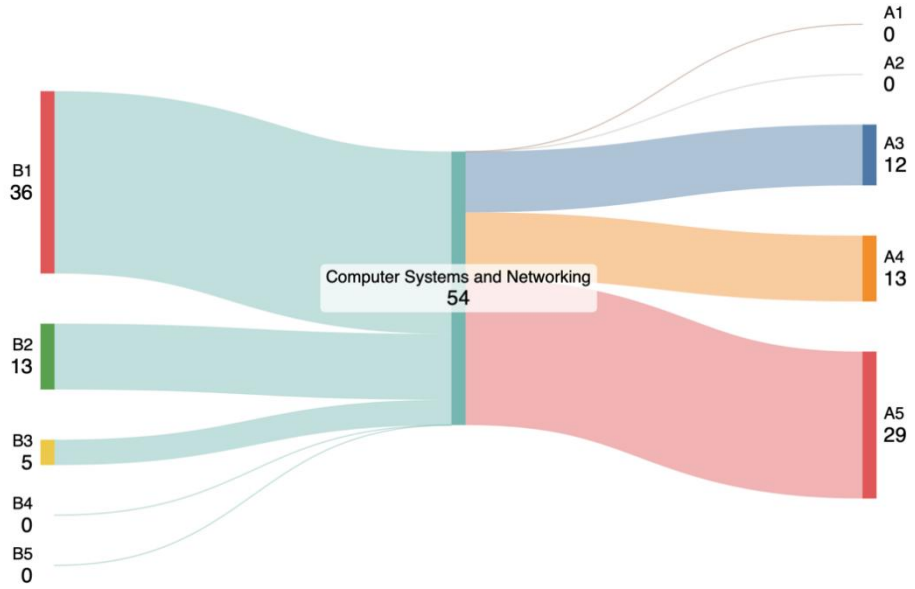

Figure 5. Results of the Computer Systems and Networking Self-Assessment Before and After the Activity

improvement to the participants as the training were able equip participants with the proficiency in Computer Systems Servicing (CSS NC II) Training and provide teachers with the necessary knowledge, skills, attitude and resources to effectively integrate technology into their teaching practices.

4. CONCLUSION

This training that cover the basic and common competencies in addition to the core competencies such as to install and configure computers systems, set-up computer networks and servers and to maintain and repair computer systems and networks that includes both theoretical knowledge and hands-on practical experience. The result is evident that the participants acquired fair and some have acquired a lot of knowledge and skills which empowers them to be a ready to take the TESDA National Certificate Holder or NC II and further empower the teaching personnel in the Island of Guimaras to have sufficient knowledge and skills in ICT.

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