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The Status and Instructional Value of DepEd Computerization Program Among Secondary Schools in Cagayan De Oro City: Input for Policy Implication

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Abstract

The study assessed the status and instructional value of the DepEd Computerization Program in secondary schools in Cagayan de Oro City, with a focus on its policy implications. This quantitative study employed descriptive design, and data were collected through surveys administered to 189 teachers who received computing devices and were employed as full-time junior high school teachers in the 2024-2025 academic year. Additionally, 27 ICT coordinators provided supporting insights.

Findings showed that while teachers had access to computing devices, the program's instructional value was hindered by inadequate infrastructure, limited professional development, and insufficient technical support. Furthermore, disparities in resources, particularly in underserved schools, exacerbated the program's effectiveness.

The study concluded that while the DepEd Computerization Program offers potential, policy reforms are essential to address these gaps. Recommendations include prioritizing policy improvement for equitable resource distribution, increasing ICT infrastructure funding, and ensuring continuous technical support. Collaboration between DepEd, local government units, and legislative bodies is crucial for securing sustainable funding and creating policies that enhance educational equity and quality.

Keywords: DepEd Computerization Program, Status and Instructional Value, Policy Implications

CHAPTER 1
THE PROBLEM

In the Philippines, the integration of technology in education has become a central focus as part of the Department of Education's (DepEd) efforts to modernize and enhance the quality of education in response to the demands of the digital age. The DepEd Computerization Program (DCP), a pivotal initiative of the government, aims to address the growing need for technology-driven educational tools by providing schools with necessary ICT infrastructure, such as computers, laptops, and other digital devices. This initiative is aligned with broader efforts to promote digital literacy and facilitate student-centered learning, ensuring that students and teachers have access to modern tools that can enhance the educational experience (De Dios, 2016; DepEd, 2020).

The DCP has been one of the Department's primary strategies to bridge gaps in educational quality, particularly by equipping schools with essential digital resources. The program's deployment is aimed at

increasing access to technology across public schools in the country, particularly in secondary education, where digital tools have the potential to significantly improve both teaching and learning processes. Initially, DepEd launched the Digital Rise Program, which is focused on improving digital infrastructure and promoting digital literacy among both students and educators, especially in the wake of the COVID-19 pandemic, which exposed the disparities in digital access across the Philippines (Santos, 2020; Bacolod, 2022). The pandemic highlighted the urgency of improving ICT infrastructure and ensuring that students from all backgrounds can access digital learning materials, especially those in rural and disadvantaged areas (Garcia et al., 2021).

The DepEd Computerization Program's efforts include the distribution of over a million devices to public schools, as well as initiatives to provide teachers with training to better integrate technology into their teaching practices. Despite significant investments, challenges remain in terms of equitable access to technology, the adequacy of teacher training, and the alignment of technology use with educational outcomes (DepEd, 2021). These challenges are compounded by socio-economic factors, geographical isolation, and limited institutional support, which continue to hinder the equitable implementation of ICT initiatives (Basic Education Development Plan, 2022). Nevertheless, evidence suggests that when used effectively, technology has the potential to enhance student engagement, improve learning outcomes, and increase teacher productivity (Harris et al., 2016).

The impact of the DepEd Computerization Program on student learning is still not fully understood, particularly in terms of its long-term effects and the factors that influence its success. Although there have been efforts to assess the deployment of technology in schools, little research has explored how the resources are being utilized in classrooms and the extent to which they are contributing to the educational outcomes of students, especially in secondary schools outside major urban centers (Timotheou et al., 2022). Previous studies have pointed to the importance of teacher training and readiness in leveraging technology effectively; however, there is a gap in understanding how teachers' digital competencies translate into practical classroom applications in the context of DepEd initiatives (Costa et al., 2021). Further research is needed to explore the association between the availability of ICT resources and the improvement of teaching methodologies, student engagement, and learning outcomes.

Additionally, while some studies have investigated the status of ICT integration in urban schools, the challenges faced by schools in rural and remote areas remain underexplored (DepEd, 2021). There is a need for research that specifically addresses the disparities in access to digital resources and the practical implications of these inequalities on educational equity. Furthermore, understanding how the different levels of government, local school administrators, and communities interact in supporting or hindering the success of these programs is an area that warrants further investigation.

Given these gaps, the status of the DepEd Computerization Program in Cagayan de Oro City and its instructional value requires further exploration. This study seeks to understand the current state of the DCP in secondary schools, assess the allocation and use of technology resources, and evaluate how these resources are being applied in classroom instruction. Additionally, the study explored the experiences of teachers to better inform policy development and enhance the effectiveness of technology integration in Philippine schools.

Theoretical Framework

The study is anchored by the Stakeholder Theory, which as elucidated by Freeman (1984) and further expanded upon by Mitchell et al. (1997), provides a comprehensive framework for understanding the

dynamics of organizational decision-making and the importance of considering the interests of all stakeholders involved in a given initiative. This theory emphasizes the significance of acknowledging and addressing the interests and needs of all stakeholders engaged in a particular initiative. It posits that organizations should not solely prioritize the interests of shareholders but should also consider the concerns of other stakeholders, including employees and the community at large. Stakeholder Theory suggests that these diverse stakeholders possess legitimate interests and can significantly impact the success or failure of organizational endeavors. Therefore, organizations must engage with stakeholders, understand their perspectives, and integrate their input into decision-making processes to achieve optimal outcomes and ensure long-term sustainability. By recognizing stakeholders as essential contributors to organizational success, Stakeholder Theory advocates for transparent communication, collaboration, and the establishment of mutually beneficial relationships between the organization and its stakeholders.

In the context of the present study on DepEd Computerization program in secondary schools, Stakeholder Theory is highly relevant as it emphasizes understanding and addressing the diverse perspectives, needs, and concerns of teachers—the primary stakeholders—in technology integration efforts. After all, teachers, as primary stakeholders in the implementation of DepEd Computerization initiatives, play a crucial role in shaping the success of these endeavors. By adopting a stakeholder perspective, researchers can gain insights into teachers' perceptions, preferences, and challenges related to the technology program, informing strategies to foster their engagement and satisfaction. This includes understanding how teachers perceive the benefits and challenges of technological integration, their expectations for support and resources, and their role in shaping the success of the initiative. This approach can have significant implications for the study, as it can lead to the development of inclusive and responsive policies, resources, and support mechanisms that better meet teachers' needs and ultimately enhance the success of DepEd Computerization initiatives in secondary schools.

Applying the Stakeholder Theory in the study can yield valuable insights into the multifaceted interactions between teachers and the DepEd Computerization program. By engaging teachers as stakeholders, researchers can gather rich quantitative data through surveys to explore teachers' perspectives and experiences with technology integration. This approach allows for a nuanced understanding of the factors that influence teachers' acceptance and utilization of technology in their instructional practices, as well as the barriers they may encounter in the process. Moreover, by actively involving teachers in the research process, stakeholders can feel empowered and valued, fostering a sense of ownership and commitment to the success of the technology initiative. The implications of applying Stakeholder Theory extend beyond the research study to inform actionable strategies and policies for promoting effective technology integration in secondary schools. By acknowledging teachers as key stakeholders and incorporating their perspectives into decision-making processes, policymakers and administrators can develop more responsive and tailored approaches to supporting technology integration initiatives. This may involve allocating resources for professional development, providing ongoing technical assistance, and fostering a culture of collaboration and innovation. Ultimately, embracing a stakeholder-centric approach can lead to more inclusive, sustainable, and impactful technology initiatives that meet the diverse needs of teachers and contribute to enhanced student learning outcomes.

Conceptual Framework

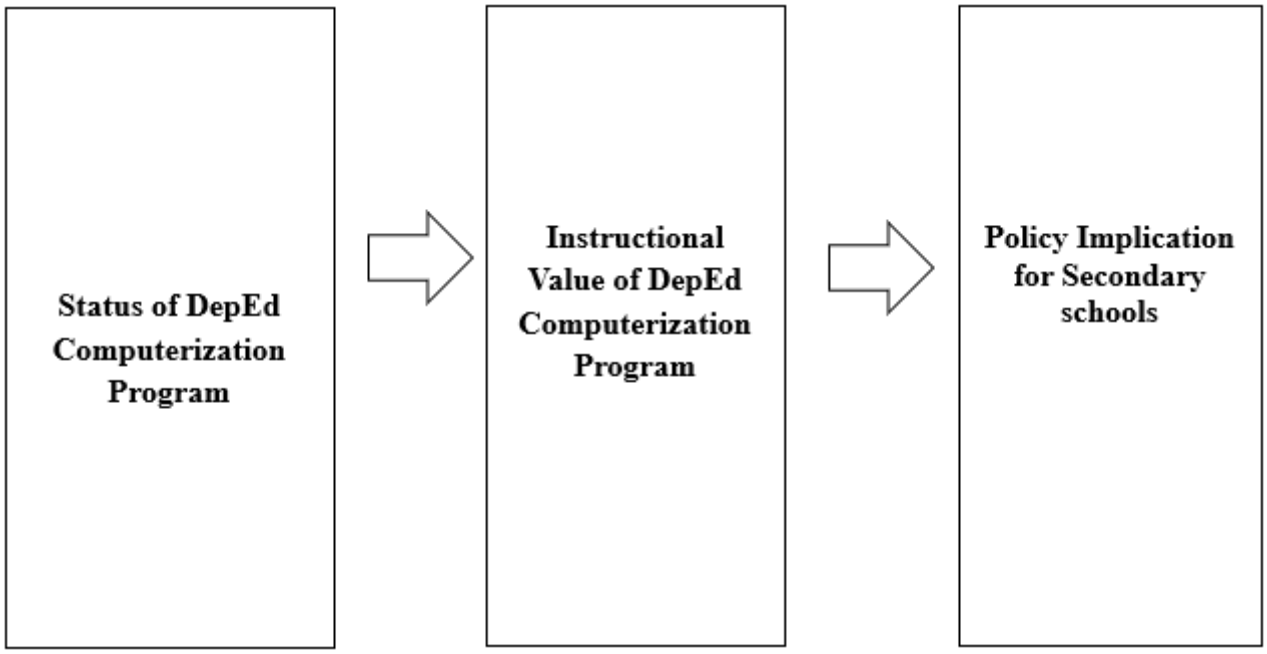

Figure 1. Schema of the Study

Figure 1 presents the schema of the study, illustrating that the independent variable is the status of DepEd Computerization Program, as viewed by ICT coordinators, and based on the profile of teachers, while the dependent variable is the instructional value of the DepEd Computerization Program, which is based on the experiences and beliefs of teachers regarding the program.

The DepEd Computerization Program refers to the Department of Education's initiative to integrate technology into secondary schools by providing computing devices, establishing ICT infrastructure, and offering professional development resources to support effective technology use in teaching and learning. In assessing the status of DepEd Computerization program, there are three main components that ICT coordinators answered: the availability of Computing devices, ICT infrastructure, and Professional development resources. Computing devices refer to the hardware tools provided for educational purposes, including computers, laptops, and tablets. ICT infrastructure encompasses the software, hardware, systems, data center, and communication services supporting the use of technology in education. Professional development resources include certification programs, workshops or seminars training opportunities aimed at enhancing teachers' skills in technology integration. The profile of the teachers was also asked in terms of Years of experience, Subjects taught, and Year level taught.

Instructional value of DepEd Computerization program encapsulates how teachers perceive the effectiveness and utility of technology in improving classroom instruction and student learning outcomes. This assesses their beliefs about technology use for classroom instruction, and their beliefs about technology use for student learning. The experience of teachers who received computing devices was assessed based on the condition of the devices received and their use in the classroom, which encompasses teachers' evaluations of using technology and its applications.

The output of the study is Policy Implication for Secondary schools, which is informed by the findings regarding the status and instructional value of DepEd Computerization program. The Policy Implication

for Secondary schools represent the potential impact of the study's findings on shaping or improving policies, guidelines, and initiatives to optimize the implementation and benefits of the DepEd Computerization Program, addressing gaps and enhancing its integration into public education systems. The research questions guide the investigation, which aims to determine the current status of DepEd Computerization program, teachers' evaluations of its instructional value, and the impact of DepEd Computerization on instructional outcomes. Ultimately, the study aims to recommend implications for improvement of policy based on empirical evidence, aiming to enhance the integration of DepEd Computerization in secondary schools in Cagayan de Oro City.

Statement of the Problem

This study aims to determine the status and instructional value of DepEd Computerization program in secondary schools at the District 1 of Cagayan De Oro City. Specifically, the researcher sought to address the following:

1. What is the current status of DepEd Computerization program in secondary schools in Cagayan de Oro City in terms of:
   1.1 Availability of Computing Devices
   1.1.1 Computer
   1.1.2 Laptop
   1.1.3 Tablet
   1.2 Availability of ICT Infrastructure
   1.2.1 Software
   1.2.2 Hardware
   1.2.3 Systems
   1.2.4 Data center
   1.2.5 Communication services
   1.3 Professional Development Resources
   1.3.1 Certification programs
   1.3.2 Workshop and seminars

2. What is the profile of the teachers who receive the computing device in terms of:
   2.1. Years of experience
   2.2. Subjects taught
   2.3. Year level taught

3. What are the teachers' experiences in terms of
   3.1 Condition of the devices received
   3.2 Use of technology in the classroom

4. How do teachers evaluate the instructional value of DepEd Computerization Program technology program in terms of:
   4.1 Perceptions about technology use for classroom instruction
   4.2 Perceptions about technology use for student learning

5. What are the policy implications of DepEd Computerization Program?

Hypotheses

Research Problems 1, 2, 3 and 4 are hypotheses-free.

Significance of the Study

The researcher expects that the findings of the study are beneficial to the following stakeholders.

To the Teachers. As the respondents of the study, teachers can gain valuable insights into effective technology integration strategies. This study holds paramount significance for educators, serving as a vital resource for enhancing their professional practice and enriching the learning experiences of their students. The findings may empower educators to make informed decisions about the use of computing devices, ICT infrastructure, and professional development resources in their classrooms. Armed with this knowledge, teachers can refine their instructional methods, leverage technology to engage students more effectively, and cultivate digital literacy skills essential for success in the 21st century.

To ICT Coordinators. As the informants of the study, ICT coordinators may gain insight on the current status of on DepEd Computerization program in their secondary schools and gain awareness of the importance of the program on stakeholders and discover potentials of intervention for educational advancement. Findings can also help them empower students to advocate for equitable access to technology resources and plan a relative program in improving ICT infrastructure, and design targeted professional development programs to maximize the investments program of DepEd Computerization.

To Students. As the primary beneficiaries of educational initiatives, students are integral stakeholders in this study on DepEd Computerization program in secondary schools. The findings of this research may directly impact students' learning experiences, digital literacy skills, and overall academic achievement. By understanding the status and instructional value of DepEd Computerization, students may gain insight into how technology can enhance their learning experience and prepare them for future success in an increasingly digital world. Moreover, the research findings can empower students to advocate for equitable access to technology resources, innovative teaching methods, and opportunities for digital skill development within their school communities. Ultimately, students' engagement and feedback are essential for ensuring that DepEd Computerization initiatives effectively meet their educational needs and aspirations.

To the School Administrators. For school administrators, the findings of this study may offer invaluable guidance for strategic decision-making and resource allocation. By understanding the status of DepEd Computerization program and its impact on instructional value, administrators can optimize the allocation of budgetary resources, prioritize program in ICT infrastructure, and design targeted professional development programs. These insights enable administrators to create supportive environments that foster innovation, collaboration, and continuous improvement in teaching and learning. Moreover, by aligning technology initiatives with educational objectives, administrators can enhance school performance and promote equitable access to high-quality education for all students.

To Division and District Supervisors. Information in this study may help the Division and District Supervisors to decide or make possible technical assistance on how to implement DepEd Computerization investment and produce a higher instructional value of technology-based learning approach in the districts.

To the Department of Education. This study may provide valuable insights into the current status and instructional value of DepEd Computerization program in secondary schools, offering empirical evidence to inform policy decisions and strategic planning initiatives within the Department of Education. By understanding the effectiveness and challenges associated with DepEd Computerization implementation, education officials can refine existing policies, allocate resources more efficiently, and develop targeted interventions to support educators and students in leveraging technology for enhanced learning outcomes.

To Funding Agencies of Government. Funding agencies play a crucial role in supporting educational

initiatives, including investments in technology infrastructure and professional development for educators.

To the Policymaker. As the study can identify the challenges, successes, and areas for improvement of DCP, it can help policymakers understand how the program is implemented on the ground, especially in secondary schools in Cagayan de Oro. The findings may support policymakers in creating practical solutions to improve access to technology, enhance teacher training, and maximize the program's benefits. These insights may guide policies to strengthen digital learning, bridge the digital divide, and equip students with essential 21st-century skills.

To Future Researchers. Aspiring researchers and scholars in the field of educational technology and policy stand to benefit from the contributions of this study. By documenting the experiences and outcomes of DepEd Computerization program, this research enriches the existing body of knowledge and lays the groundwork for future inquiry. Future researchers can build upon this foundation by conducting longitudinal studies, exploring additional variables, and investigating the scalability of findings to diverse educational contexts. Through ongoing inquiry and collaboration, scholars can advance our understanding of effective technology integration strategies and drive continuous improvement in educational practices and outcomes.

Scope and Limitation

This study aims to investigate the current status and instructional value of DepEd Computerization program among 189 teachers in District 1 of Cagayan de Oro City. The study employed a survey to gather data from teachers and they were recruited through a purposive sampling with the given criteria; [1] received computing devices and currently employed as secondary school teacher in junior high school, [2] teaching within the school area in District 1 of Cagayan de Oro City, [3] full-time teaching during 2024-2025 academic year, and [4] willing to sign informed consent and participate in the survey. Outside of the inclusion was excluded. The study also recruited 27 informants, the ICT coordinators from each school within District 1 of Cagayan de Oro City. They answered 1 set of questionnaires.

The study primarily focuses on assessing the perspectives and experiences of teachers – as primary stakeholders of DepEd Computerization program or those who received a computing device. It does not extend to examining the viewpoints of administrators or other stakeholders within the educational system. Investigating the view of ICT coordinators is just to support the respondents' answer. Given the constraints of time and resources, the study is limited to Districts 1 of Cagayan de Oro City. As such, the findings may not be generalizable to other districts or regions with different demographic characteristics or educational contexts. Furthermore, the study is confined to the school year 2024-2025, and any changes or developments in DepEd Computerization initiatives beyond this period are not within the scope of this research.

In adherence to ethical principles, the confidentiality and anonymity of respondents were strictly maintained throughout the data collection process. Additionally, efforts were made to ensure the validity and reliability of the survey instruments used in the study. Additionally, it is crucial to uphold the principles of academic integrity by refraining from plagiarism and acknowledging relevant citations to maintain the originality and authenticity of this research. Any limitations inherent in the study will be openly acknowledged and presented to ensure transparency and rigor in the research process.

Definition of Terms

The following terms were defined operationally and conceptually in alphabetical order of variables to help

readers navigate and understand this study better.

Computing Devices - refer to electronic devices capable of processing data and performing various tasks. These devices are essential components of modern technology infrastructure. In the study, this was determined through the following devices:

- Computers - Electronic devices capable of processing data and performing various tasks, typically consisting of a central processing unit (CPU), memory, and input/output devices.
- Laptops - Portable computers designed for mobile use, featuring a built-in display screen and keyboard.
- Tablets - Mobile computing devices with touchscreen interfaces, typically smaller and more portable than laptops, often used for browsing the internet, reading e-books, and running applications.

Experiences of teacher – refer to teachers' experience in terms of:

- Condition of the devices received – The experiences of teachers based on the condition of the computing devices that teachers receive.
- Use of technology in the classroom - The extent to which teachers effectively integrate technology into their instructional practices and utilize technological tools and resources to enhance teaching and learning experiences in the classroom.

ICT Infrastructure - ICT infrastructure, short for Information and Communication Technology infrastructure, encompasses the hardware, software, and systems necessary for the effective functioning of information technology within an organization or environment. It includes components such as communication services, data centers, hardware devices, and software applications. In the study, this was determined through the following areas:

- Communication services - Services and technologies enabling the transmission and exchange of information, including internet connectivity, telecommunication networks, and email systems.
- Data center - Facilities equipped with infrastructure for storing, managing, and processing large volumes of data, often used for hosting servers and networking equipment.
- Hardware - Physical components of information technology systems, such as computers, servers, networking devices, and storage devices.
- Software - Programs and applications designed to perform specific tasks or functions on electronic devices, including operating systems, productivity software, and educational software.
- Systems - Integrated configurations of hardware and software designed to perform specific functions or tasks, such as operating systems, database management systems, and learning management systems.

Instructional Value - refers to the effectiveness and educational significance of utilizing technology in teaching and learning processes. It encompasses the extent to which technology enhances teaching methods, facilitates learning experiences, and contributes to achieving educational goals and outcomes. In the study, this was determined through the following scope:

- Beliefs about technology use for classroom instruction - Teachers' attitudes, perceptions, and convictions regarding the role of technology in classroom instruction, including their confidence in using technology and their beliefs about its effectiveness in supporting teaching and learning.
- Beliefs about technology use for student learning - Teachers' beliefs and perceptions regarding the impact of technology on student learning outcomes, including their views on the potential benefits and challenges of using technology in educational settings.

Policy Implication - The potential impact or influence of research findings on existing or future policies,

guidelines, or practices. It involves identifying how study outcomes can address specific issues, challenges, or needs within an organization or sector. In the context of this study, policy implications highlight the recommendations and strategies derived from research findings to guide the enhancement of the status and instructional value of the DepEd Computerization Program in secondary schools in Cagayan de Oro City.

Professional Development Resources - refers to various programs, opportunities, and activities aimed at enhancing the knowledge, skills, and competencies of professionals in specific fields or areas of expertise. In the study, professional development resources were determined through the following initiatives:

- Certification programs - Formal programs designed to assess and validate individuals' knowledge and skills in specific areas, often leading to professional certifications or credentials.
- Workshops and seminars - Training sessions or educational events focused on specific topics or skills, typically conducted in a group setting and led by experts or experienced practitioners.

Profile of teachers **–** refers to the profile of the teachers that receive the computing device in terms of Years of experience, Subjects taught, and Year level taught.

Status of DepEd Computerization Program - Refers to the government's initiatives to integrate technology into secondary schools under the jurisdiction of the Department of Education (DepEd) in the Philippines. It encompasses the current state of various components of the technology infrastructure, resources, and support systems allocated for educational purposes.

CHAPTER 2

Review Of Related Literature and Studies

Review of Related Literature

The literature collected in this section is replete with the concept of DepEd Computerization and its initiatives transformation for K-12 and 21st century learners.

Given how quickly computers, technology, and the internet are transforming virtually every aspect of modern life—from education to communications to careers. DepEd Computerization initiatives are driven by the belief that 21st-century learners need constant, on-demand access to computers throughout the day and, ideally, at home. On the other hand, it is expected that teachers can take full advantage of modern learning technology and teaching tools for all students to have access to a computer and learn. Globally, it is believed that teaching technological literacy and computing skills should be a priority in today's classrooms. Its purpose is to make full use of modern learning tools and produce digitally literate and proficient students. So, investment to supply computer devices to all students and incorporate technology into every topic is very important in the educational sector and in all practical aspects of life and even the future (Alejandro et al. 2020; KnowingTech, 2015). For years, before DepEd Computerization became the norm, textbooks and paper-based materials were the go-to, tried-and-true medium. Then, school districts progressively adopted "bring your own device" (BYOD) policies, allowing students to bring their own computers, smartphones, or other electronic devices to class. However, it was insufficient. They were typically designated for students in higher education and not for primary schools (The glossary of education reform, 2013). However, with DepEd Computerization program, even elementary students can become more integrated into the educational curriculum. Schools invested in DepEd Computerization to help K-12 students narrow the learning gap, and the results have been impressive. DepEd Computerization, also known as 1:1 computing or 1:1 technology in a school district, is the concept of providing each student with their own computers, such as Chromebooks, iPads, and other devices. Rather

than depending on students to bring their own devices, schools standardize what every student uses across the district to encourage equitable technology distribution in classrooms and assist students in adapting to fast-changing learning environments (Bulman & Fairlie, 2016).

The Department of Education (DepEd) is obligated by law and its name to provide and provide access to basic education to all learners at all times. So, amid the COVID-19 pandemic and quarantine, DepEd explored, developed, and improved online learning and teaching measures and various alternate means of education delivery. Needless to say, in addition to its objective of ensuring that learning continues, the Department has a responsibility to safeguard the health and safety of students, instructors, and department employees. For this purpose, the Department of Education (DepEd) must improve its Information and Communications Technology (ICT) capabilities. It must, in particular, accelerate the DepEd Computerization Program (DCP) through DepEd Computerization investment and programs (DepEd, 2023).

DepEd had invested in 1,253,919 devices and deployed them throughout 93 percent of secondary schools by the year 2020. 36,676 from DCP2020 and 39,583 from Bayanihan II, two sets of laptops were successfully procured and delivered before the end of the year and followed by another set of 65,683 laptops bought under DCP2021. There was a total of 1,385,178 devices, all delivered. However, only 6% of the 22,572,923 kids enrolled in secondary schools will be able to use them if individual students use them. Thus, the Department of Education has already permitted schools to distribute the gadgets to instructors and students to supplement the 67 percent of the population who already have smartphones. Based on the above inventory, there are approximately 838,618 computer devices (223,808 Laptops; 124,939 Desktops; 489,871 Tablet PCs) that can be used by teachers (223,808 Laptops; 124,939 Desktops; 489,871 Tablet PCs) that can be used by teachers (223,808 Laptops; 124,939 Desktops; 489,871 Tablet PCs). This represents almost 97 percent of DepED's total teaching force of 857,310 (DepEd, 2024).

Many educators and reformers in times of pandemic believe that DepEd Computerization learning environments give them more flexibility in how they use computers as teaching tools. They can also avoid many of the logistical issues that come with more limited or constrained computing options. DepEd Computerization programs enable all students in a class to work in a virtual classroom. At the same time, it enables teachers to use interactive, technology-assisted teaching approaches that need students to have computer access. It makes it easy for students to save work to their own computers and for teachers to install unique software programs on every computer in the classroom (Groff, 2013; Incident IQ, 2021).

As students enter high school, more flexible laptop programs are typically introduced. This guarantees that K-12 students are responsible for district technology, resulting in less labor and future maintenance. The majority of educators and K-12 professionals appear to feel that providing additional gadgets to students is a positive thing. As a result, K-12 school districts are trying to keep up with rising technological costs, especially when it comes to ensuring equal access to all students. However, DepEd Computerization access to technology for the standard school year in all classrooms is stressed to retain competitiveness with equivalents in a global market (Porter, 2013). It effectively improves the quality of education but costs too much investment. In a world where every state and money is scrutinized, the ability to assess the instructional value and effectiveness of technology investments, particularly DepEd Computerization investments program, is critical for districts that are currently implementing DepEd Computerization initiatives or considering it as part of their long-term strategic plans.

Massachusetts Department of Elementary and Secondary Education (2016) suggests that before implementing the program, school districts of the initiatives need at least six analysis stages to build the

plan and incorporate technology into schools. Any technology strategy should be based on the educational goals of the school system (stage 1). If done effectively, this step will clearly outline the technical and functional requirements needed to meet the district's educational goals (stage 2). Potential technology solutions will be determined by these standards (stage 3). Following the development of the strategy, it should be tested for technical and operational feasibility. Explore and refine the plan because more than one viable technical solution is capable of meeting a system's goals (stage 4). Then based on the investigation, follow the selection of the best appropriate technology (step 5). Lastly, the total costs of the technology plan should be investigated by building a model of the plan and cost-effectiveness (stage 6). Consequently, learning environments have become more complex because of the problems with the sudden introduction of new media and technology (Parikh, 2020).

On the surface, a traditional classroom, where students are surrounded by the blackboard, desks, and textbooks, looks to have less distraction. Students who have access to computers at the school or who take classes online, on the other hand, are exposed to more audio and visual information. These encounters can be engaging and may broaden students' learning. However, at the same time, it may be overpowering or distracting depending on a variety of factors ranging from individual learner characteristics to the architecture of the learning environment. It means that students can multitask on their laptops while taking notes and switching between Word documents, chat windows, and the internet. These multitasking tasks could be linked and combined to help students learn. They can, however, compete for students' attention and deflect it away from the learning process. This argues that students may emphasize technology over learning depending on the influence of the learning environment (Positive1to1, 2018).

But it cannot be denied that the information and knowledge that are being obtained today are the ways to hone the competition, comfort, productivity, and wealth of an individual. As a result, there have been a lot of developments as a means of instruction in the 21st Century, which includes the rise of information technology that can be used in any method and can be utilized progress and transmission of information, publishing, and processing of all IT-related sources. Information technologies have affected human lives in almost all aspects, as they can speed up the delivery of information that can be used to enhance the learning and instructional environment, most importantly, setting up academic goals for the students. The use of computers and other multi-media technologies help revolves society in making it useful as communicational and informational technologies for a better level of performance of instruction (Bhakta, 2016).

The ICT infrastructure serves as the foundational framework for enabling the effective functioning of computing devices such as computers, laptops, and tablets within organizational settings. This infrastructure encompasses various components, including hardware, software, systems, data centers, and communication services, all of which play vital roles in supporting information technology operations, as according to Astri and Gaol (2013), an effective ICT infrastructure ensures consistency, accessibility, and efficacy in the provision of information, thereby enhancing organizational performance. So, an effective ICT infrastructure ensures the availability of hardware components such as servers, networking equipment, and end-user devices, which are essential for accessing digital resources and educational materials on computers, laptops, and tablets in schools. Additionally, robust software applications, including educational software and productivity tools, are integral to enhancing the instructional value of DepEd Computerization investment program by providing interactive learning experiences and facilitating collaboration among students and teachers. Moreover, Adjijil's (2013) project paper on information systems strategic planning emphasizes the importance of ICT infrastructure in providing the necessary

information for different organizational units, enabling seamless business processes and solutions dispensation.

Additionally, the significance of data centers in supporting ICT infrastructure is highlighted by Fadaee et al. (2022), who underscore the role of data centers in providing essential appliances and internet services to organizations. The study by Hani (2021) further emphasizes the critical nature of data centers in facilitating the adoption of digital technology because the existence of reliable systems, such as learning management systems (LMS) and administrative platforms, within the ICT infrastructure, enables efficient management of educational resources, student data, and communication channels, thereby supporting the seamless integration of computing devices into classroom instruction. Furthermore, data centers play a crucial role in storing and processing educational data and digital content, ensuring accessibility and reliability of resources for both teachers and students. Likewise, communication services, such as internet connectivity and telecommunication networks, are essential for facilitating online learning activities, research, and collaboration among students and educators using computing devices.

Consequently, technologies in the Philippines have been very helpful in supporting the education of Filipino students significantly during the new learning modes of the school. The modalities that were used to give better instructions are all through the means of technology, since no physical classes were held, the market opened to innovations and implementation of programs that are also available on different platforms and media technology such as television, and radio. It had become the backbone of educating the minds of the students and paving the way for more learning, thus, integrating the Information and Communications Technology of the country that directs for better instructions is a good move that can benefit the whole society (Hernando-Malipot, 2021). Given the benefits of technology integration in education, it is crucial to review the status and instructional value of DepEd Computerization.

Review of Related Studies

In this section, the related studies hereby present the benefits of technology-based learning on learning and teaching. It also focuses on the struggles of implementing DepEd Computerization and teachers' competence in integrating it.

In the study of William (2018), findings highlight that DepEd Computerization program initiative's implementation may not ensure an increase of students' achievement in school, but in reality, it may end in a decline as findings demonstrate that the budget alone will most likely not result in the intended achievement outcomes, given that the investment will directly and favorably affect important areas of success only. This research does not show that technology is a poor investment in school, but by citing the growing investments or putting in place a DepEd Computerization program will result in gains in performance cannot be justified by outcomes. When school districts create their budgets, interested parties examine them and are wishing for more evidence-based justifications to support major spending decisions. Specifically, it shows that a DepEd Computerization program that gives every student a tablet can have numerous benefits, but it is a costly way for students to access the Internet, word processing, and social networking until districts decide precisely how to use the tool for learning.

As for Chang (2016), DepEd Computerization works best in classrooms where teachers are knowledgeable about technology and can instruct students on how to work on projects that need communication, creativity, and collaboration with technological aid. Because a DepEd Computerization program must stay focused on topic standards and not deviate from its stated goals to be academically successful. So, a teacher's personal device can be a useful tool in supporting students in attaining these objectives and also

related purposes, including innovation, creativity, and research. When students have access to the world around them and collaborate with their teachers, they have a higher effect on student achievement. Marshall (2021) also stated that the findings of the study suggest that technology adoption, particularly a DepEd Computerization program, should be deployed only after the planning stage. Administrators and other district stakeholders should first identify clear objectives and targets before implementing them so that investment would not be wasted. Hence, the implementation and effectiveness of DepEd Computerization program are conceivable and necessary to review.

With a technology-based approach to learning, students and teachers in schools can go from occasional and supplemental use of computers for instruction, then can switch to more frequent, core use of technology in a variety of settings with more widespread access to computers. Findings by the study of Yaniawati et al. (2020) stated that students could access a greater range of resources to enhance their study, engage with peers and teachers, and become fluent in the technological tools of the 21st-century job due to ubiquitous, 24/7 access to computers. Digital education is one of them, as it allows learners and instructors to learn more quickly while also allowing for significant creativity and innovation. Greve and Tan (2021) renounce in their study that through digital education, learning can now be accessed from various locations, making group work and the accomplishment of objectives easier while also boosting learners' general topic knowledge.

Educational authorities believe that providing students with a computer with internet connectivity allows them to access up-to-date learning resources that were previously only available to those who lived near a library or benefited from school funds that allowed for regular textbook investment. Many argue that providing students with better access to computers can give them more fair access to resources and learning opportunities and facilitate more frequent use of technology in class. Because early evaluation studies looked at how providing computers helped close the gap between students of low-income and more advantaged kids. Furthermore, examinations of some of the early state-administered computer proficiency tests found that having access to computers at home explains disparities in student performance on those tests. All of these findings proved the potential and importance of giving more ubiquitous computer access to all learners (Bulman & Fairlie, 2016).

Despite the advantages, low and middle-income countries face challenges implementing online learning due to a lack of electricity and access to the internet (Baticulon et al., 2020). Like any other country, Filipino students are having trouble dealing with online learning classes, as Rotas and Cahapay (2020) found a significant issue with internet connectivity. This can become a problematic issue for online learning sessions of students, especially those from low-income families, who must find time and an area where they can study in order to enhance their knowledge and performance. In comparison, some students and teachers in neighboring countries were relatively satisfied with online learning, indicating that the most important benefit of online learning is its adaptability and flexibility. Findings revealed that wherever there is a strong internet signal, it allows them to study whenever they want and helps to ensure that online learning is flexible (Bdair, 2021). Given the pandemic situation, online education is justified. But its use in teaching online is debatable since evaluating student experience with web-based learning methods has been a significant concern for some families and students (Coman et al., 2020).

In fact, when classes began during the pandemic, teachers and education centers were unsatisfied with the standards they were required to follow. Health measures became the utmost responsibility of each school and institution. Consequently, due to the transition and implementation of the new teaching and learning paradigm, both teachers and administrators have faced several concerns, dilemmas, and constraints with

little time to prepare. Furthermore, Dayagbil et al. (2021) attested that the COVID-19 pandemic impacts public educational sectors and stakeholders in terms of instructional modalities, school operations, and policies.

When the preponderance of teaching was done at home, little was known about the issues that contributed to teachers' inability to sustain teaching. For both instruction and communication, schools and instructors have become increasingly reliant on digital tools. While some teachers may dislike using the internet, connecting through social media channels, or using video-conferencing software, others may find remote teaching difficult (Dayagbil et al., 2021). In comparison, findings also stated that some teachers have considered the situation advantageous. Because teachers' skills to use and incorporate technology into their classrooms are supported by DepEd Computerization investment (Bdair, 2020).

According to Agaloos et al. (2020), teachers' attitudes and ideas regarding technology's role in the curriculum can influence how and when teachers integrate computers and likely influence the implementation of DepEd Computerization programs. Findings stated that when teachers do not perceive the expected usage of technology to be closely related to the objectives of the curriculum, they use technology less frequently. Teacher attributes to pedagogical style, confidence or feelings of readiness to use technology, and subject-matter expertise are connected to technology integration levels. Their professional development and activities influence their attitudes and knowledge about how and what to teach and how to use technology effectively. In simple terms, findings revealed that teachers' attitudes, feelings, beliefs, and opinions on preparedness to use technology are linked with students' outcomes because teachers' competence can influence the implementation of DepEd Computerization programs.

On the other hand, according to Aperribai et al. (2020), the essential components most perceived by the respondents who teach in distance learning education are training, having a good attitude, technology competency, work commitments, knowledge of curriculum, and readiness to teach in a new environment. In the Philippines, the preparedness of DepEd teachers for online teaching is satisfactory despite their limited experiences in distance education, such as technical skills, time management, knowledge, and attitude in online education. DepEd teachers were able to cope with the trends in distance learning despite having a diverse student population, a lack of specialists, being home-schooled, and experiencing new work environments and demands (Agaloos et al. 2020). As reflected in numerous studies, questions remain regarding the implementation and impact of these initiatives on teaching and learning outcomes. As such, there is a pressing need for empirical research to assess the effectiveness of DepEd Computerization investment and provide insights for policy development.

CHAPTER 3

Research Methodology

This chapter highlights how the study was conducted, which includes research design, research environment, respondents and sampling procedure, research instrument, validity and reliability of instruments, data gathering procedure, statistical instruments/procedure, scoring guidelines, and ethical considerations.

Research Design

This quantitative study utilized the descriptive research design, employing a survey questionnaire as the primary tool for data collection. Descriptive survey research was chosen as the research approach due to its effectiveness in systematically describing existing conditions and phenomena. Descriptive research

design is primarily concerned with providing an accurate portrayal of characteristics of a phenomenon or population. This approach does not manipulate variables but instead focuses on observing and describing the current state of affairs (Creswell, 2014). It answers questions related to "what," "who," "where," and "how," offering a detailed account of the subject without examining cause-and-effect relationships. Hence, this approach aligns with the objectives of the present study, which aimed to obtain factual information about the status and efficacy of DepEd Computerization investment programs in secondary school.

Additionally, Calmorin (2017) emphasizes that descriptive survey studies are particularly suitable for exploring the prevailing or existing status of an event or problem. By utilizing the descriptive survey method, this research sought to describe the current state of DepEd Computerization programs in secondary schools, providing valuable insights into their implementation and effectiveness. The descriptive method of research was justified in this study for its ability to systematically describe the phenomenon of interest and explore the existing conditions surrounding DepEd Computerization investment programs in secondary schools.

Research Environment

The research environment for this study comprises secondary schools belonging to District 1 of Cagayan De Oro City, which is located in the Northern Mindanao region in the Philippines. It serves as the capital of the province of Misamis Oriental, and these districts represent specific geographic areas within the city and are characterized by different demographics, resources, and educational priorities. By focusing on secondary schools in these districts, the study aims to capture a diverse range of teachers' perspectives and experiences related to the integration of technology in education. The map is shown in Figure 2.

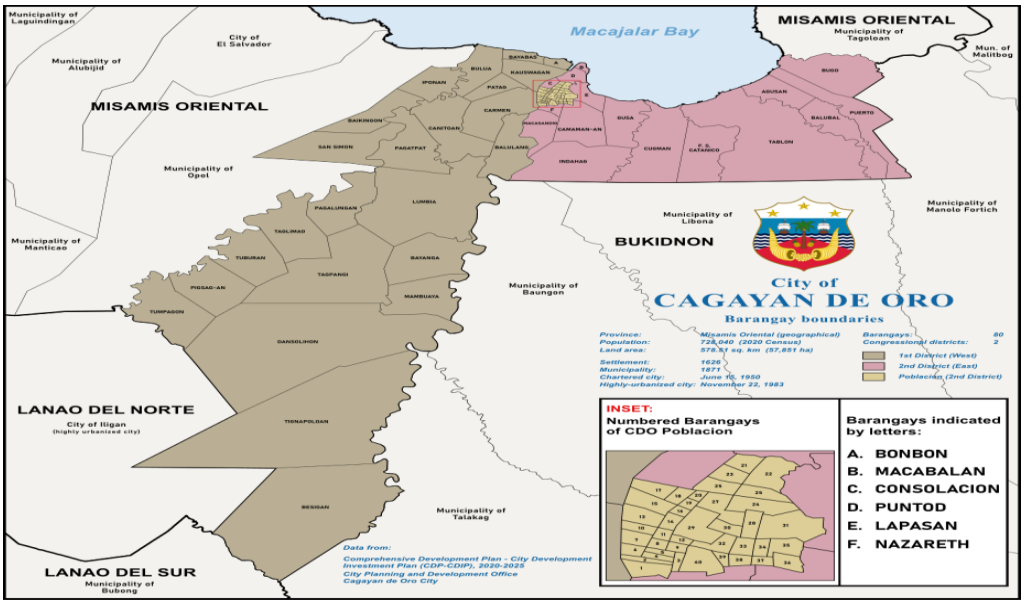

Figure 2. Map of Cagayan De Oro City

Respondents & Sampling Procedure

Teachers, as the primary stakeholder of the DepEd Computerization program, are the respondents of the study. Teachers in District 1 of Cagayan de Oro City were selected as the respondents of the study because teachers play a central role in implementing educational technology initiatives, designing instructional activities, and facilitating student learning experiences. Their perspectives, attitudes, and experiences with

technology integration are crucial for understanding the opportunities and challenges associated with DepEd Computerization investment programs. Random sampling was used for the study to ensure that every secondary school in Cagayan de Oro City has an equal chance of being selected. This method provides a fair representation of the population, reducing bias and allowing the findings to be generalized to all schools in the area. The inclusion criteria to be eligible respondents is that they must be: [1] received computing devices and currently employed as public-school teacher in junior high school, [2] teaching within the school area in District 1 of Cagayan de Oro City, [3] full-time teaching during 2024-2025 academic year, and [4] willing to sign informed consent and participate in the survey. Outside of the inclusion was excluded.

Of the total teacher respondents who participated in the study, 163 (86%) were female, while only 26 (14%) were male. This indicates that the majority of the respondents were women, reflecting the typical gender distribution in the teaching profession, where females often comprise a larger portion of the workforce.

The study also recruited informants, the ICT coordinators from each school within District 1 of Cagayan de Oro City. They answered 1 set of questionnaires to assess the status of DepEd Computerization program. Notably, the study primarily focuses on assessing the perspectives and experiences of teachers – as primary stakeholders of DepEd Computerization program or those who received a computing device. It does not extend to examining the viewpoints of ICT coordinator, administrators or other stakeholders within the educational system in investigating the experiences and instructional value of using technology in the classroom.

The target sample size for this study was calculated using the Cochran formula, resulting in a sample size of approximately 189 teachers and 27 ICT coordinators. The margin of error remained at 5%, with a confidence level of 95%, and a response distribution of 10%. The predetermined population for District 1 Junior High School in Cagayan De Oro consists of 780 teachers and 32 ICT coordinators. This sample size was deemed appropriate to ensure statistical power while still being manageable for recruitment and analysis. The sample size was calculated to be a larger sample because the researcher followed the rule of thumb of sampling, which indicates that a larger sample size increases the statistical power of the investigation of the study (Biau et al., 2008). Meanwhile, the information of the population was obtained with permission access from the school division of Cagayan De Oro. Listed below is the list number of teachers and ICT coordinators currently employed within district 1 of secondary school or junior high school at Cagayan de Oro City.

School Name	Teachers	ICT Coordinators
Bayabas National High School	28	1
Kauswagan National High School	62	1
Bonbon National High School	19	1
Lumbia National High School	94	1
Taglimao National High School	10	1
Tagpangi National High School	21	1
Tuburan National High School	8	1
Pagalungan National High School	7	1
Pigsag-an National High School	7	1

Tumpagon National High School	12	1
Mambuaya National High School	29	1
Bayanga National High School	11	1
Tignapoloan National High School	16	1
Besigan National High School	9	1
Man-ai National High School	7	1
Dansolihon National High School	15	1
Carmen National High School	62	1
Balulang National High School	33	1
Bulua National High School	95	1
Canitoan National High School	37	1
Pedro ‘’Oloy’’ N. Roa, Sr. National High School	54	1
Iponan National High School	62	1
Pagatpat National High School	22	1
Baikingon National High School	6	1
San Simon National High School	8	1
Ext. Bulua National High School	15	1
Magayad Integrated School	5	1
Midkiwan Integrated School	6	1
Balongkot Integrated School	4	1
Cadayonan Integrated School	5	1
Dunggoan Integrated School	6	1
Iba Integrated School	5	1
Total	780	32

Figure 3. List Number of Teachers and ICT Coordinators *HR Data (2024)

Additionally, a purposive sampling was employed in selecting teachers who have received computing devices from district 1 in junior high school. This sampling approach sets a criteria in selecting qualified respondents and informants to answer best the subject of the study and helps minimize bias and ensures that the sample accurately reflects the characteristics of respondents (Taherdoost, 2016).

Research Instrument

In the conduct of this study, a survey questionnaire served as the main instrument of the study to gather pertinent data based on the main focus of the researcher, and data obtained from focused group discussion supported the results analyzed from survey. There are 4 parts of the questionnaire.

The first part is a researcher-made questionnaire checklist, which aims to determine the status of DepEd Computerization resource allocation in schools. The questionnaire that has questions involving the availability of computing devices, ICT infrastructure, and opportunities for professional development resources were answered by ICT Coordinators. Interview guide question for focused group discussion of ICT coordinators is also attached next to the first part of the questionnaire. There are three items with fol-

low-up interview questions enclosed.

While the second part is just a profile-check questionnaire for teachers. Profile includes subjects taught, years of experience, sex and year level taught. Part 3 and part 4 of the questionnaire were also answered by the teachers, and they are adopted from a study by Raturi et al. (2011) and Chang (2016).

The part 3 questionnaire consists of a total of 32 items which encompasses 2 components: 12 items for assessing the condition of computing devices received and 20 items for using technology in the classroom. The first component was adopted from a study by Raturi et al. (2011) and will use a 5-point likert scale; 1 – Poor, 2 – Fair, 3- Good, 4-Very Good and 5- Excellent. While the second component was adopted from a study by Chang (2016) and utilized 4-point Likert scale; (1) Beginner, (2) Intermediate, (3) Advanced, and (4) Advanced High.

Part 4 questionnaire which was adopted from the study of Chang (2016) consists of 31 items and divided into two components: teachers' beliefs about technology use for classroom instruction and their beliefs about technology use for student learning, which will address the instructional value of DepEd Computerization program. Response option for this questionnaire utilized 4-point Likert scale: (1) Strongly Disagree to (4) Strongly Agree.

Validity and Reliability of Instruments

For Part 1 of the questionnaire, which comprises a researcher-made questionnaire checklist, a content validity was conducted, through scrutiny by at least 3 panel of experts; [1] ICT or from DepEd [2] DepEd Teacher [3] Expert in ICT. Aside from them, everything was checked and validated by the thesis adviser. Their feedback was incorporated to refine and enhance the clarity and relevance of the checklist items and interview questions. Since it is a profile-check questionnaire only, there’s no need for any validation, reliability, or pilot test check.

Part 2 and part 3 of the questionnaire were adopted from a study by Raturi et al. (2011) and Chang (2016) and both the instrument has already undergone validation and demonstrated reliability. The part 2 questionnaire consists of a total of 32 items which encompasses 2 components: 12 items for assessing the condition of computing devices received and 20 items for using technology in the classroom. The first component was adopted from a study by Raturi et al. (2011) and obtained an acceptable level of Cronbach alpha of .76. While the part 3 was adopted from a study by Chang (2016) and yielded a high level of Cronbach alpha of .980. Part 4 questionnaire is also adopted from the study of Chang (2016) and consists of 31 items divided into three components and each established a Cronbach alpha of: teachers' beliefs about technology use for classroom instruction (α = .932), and their beliefs about technology use for student learning (α = .932). The validity and reliability of Part 2, 3 and 4 are established based on the prior validation and reliability testing conducted by Raturi et al. (2011) and Chang (2016).

Since the Part 2, 3 and 4 questionnaires have already undergone validation and reliability testing in a previous study by Raturi et al. (2011) and Chang (2016), there's no need to establish validity and reliability again for this portion of the questionnaire.

Data Gathering Procedure

Initially, the researcher sought a letter of approval from the school division superintendent to conduct the study, and the approved letter was shown to the principals of each participating school in District 1. Once the panel of experts approves the administration of the questionnaire and the researcher obtains the

necessary approval from relevant authorities to conduct the survey in Cagayan De Oro District 1, junior high school, the researcher recruited teachers and ICT coordinator to conduct the data gathering.

Face-to-face interactions were utilized for data collection, allowing for direct engagement and ensuring clarity in responses. Of course, before administering the survey, informed consent was obtained from each respondent, to ensure the confidentiality and voluntary nature of their participation. The survey was conducted at convenient locations within the selected districts, ensuring accessibility for all participants. Throughout the data-gathering process, strict adherence to ethical guidelines was maintained, and any concerns or questions from participants were addressed promptly.

Finally, the collected data was meticulously recorded, organized, and stored securely in a safe file or storage for subsequent analysis. Data obtained from the survey was encoded into the Statistical Package for Social Sciences (SPSS) software, and a qualified statistician performed the pertinent statistical analysis. Then, the researcher provided a comprehensive report on the results of data analysis and concurs conclusions and recommendations for future consideration and input of policy development.

Statistical Instruments/Procedure

The study employed a combination of descriptive and inferential statistics to analyze the data and address the research questions and hypotheses.

Descriptive Statistics

For Research Question 1, which focuses on describing the current status of DepEd Computerization program in secondary schools in Cagayan de Oro City, descriptive statistics such as frequencies and percentages were utilized to describe the overview of the distribution and characteristics of computing devices, ICT infrastructure, and professional development resources.

For Research Question 2, which focuses on teachers' profiles, frequencies, and percentages was utilized to describe the profile background of teachers in terms of years of experience, subjects taught, and year level taught.

For research Question 3, which involves knowing the experience level of teachers that received computing devices, weighted mean or measures of central tendency were used to describe the teachers; experience in terms of condition of the devices received and their use in the classroom.

For Research Question 4, which explores how teachers evaluate the instructional value of DepEd Computerization program, weighted mean or measures of central tendency were used to describe or summarize the responses of teachers regarding technology usage and beliefs about technology's effectiveness in classroom instruction and student learning.

Research Question	Data Treatment
RQ1	Descriptive Statistics - Frequency and Percentage
RQ2	Descriptive Statistics - Frequency and Percentage
RQ3	Descriptive Statistics - Weighted Mean
RQ4	Descriptive Statistics - Weighted Mean

Figure 4. Data Treatment

Scoring Guidelines

The scoring guidelines were established for Part 1, 3 and 4 of the questionnaires to ensure consistency and accuracy in evaluating responses. For Part 1, which consists of researcher-made checklist items, each item was assigned a score based on the presence or absence of specific criteria. The criteria for interpreting the results of frequency and percentage distribution are provided below to determine the status of resource allocation of DepEd Computerization program.

Frequency Range	Percentage Range	Verbal Interpretation
15 or more	51% or more	Widely Available
10 - 14	34% - 50%	Highly Available
6 - 9	21% - 33%	Readily Available
3 - 5	10% - 20%	Limited Availability
0 - 2	0% - 9%	Scarcely Available

For Part 3, there are 2 components to assess the teachers' experience with computing devices received. The first component was adopted from a study by Raturi et al. (2011) and uses a 5-point Likert scale; 1 – Poor, 2 – Fair, 3- Good, 4-Very Good and 5- Excellent. The scoring criteria are predetermined based on established guidelines from the original study. Below are the scoring criteria of mean average range.

Numerical Rating	Scale Range	Verbal Interpretation
5	5.00 – 4.00	Excellent
4	3.99 – 3.00	Very Good
3	2.99 – 2.00	Good
2	1.99 – 1.00	Fair
1	1.00 – 0.99	Poor

For the other components of the questionnaire which is adopted from a study by Chang (2016), respondents were asked to rate each items using 4-point Likert scale: (1) Beginner, (2) Intermediate, (3) Advanced, and (4) Advanced High. Below are the descriptive ratings of the scale for weighted mean used to assess their experience in using the technology in the classroom.

Numerical Rating	Scale Range	Verbal Interpretation
4	4.00 – 3.00	Advanced High Level
3	2.99 – 2.00	Advanced Level
2	1.99 – 1.00	Intermediate Level
1	1.00 – 0.99	Beginner Level

For Part 4, which involves an adopted questionnaire from Chang (2016), scoring guidelines are based on the Likert-type scale responses provided by the respondents. Higher scores indicate more favorable responses, and contrast outcomes for lower scores, which assessed the instructional value of DepEd Computerization. The scoring criteria are predetermined based on established guidelines from the original study. Clear instructions were provided to respondents to facilitate accurate scoring, in which the respondents were asked to answer the first component of the questionnaire to rate 4-point Likert scale; (1) Strongly Disagree, (2) Disagree, (3) Agree, and (4) Strongly agree. Below are the descriptive ratings of the scale for weighted mean used to assess the instructional value of DepEd Computerization program in terms of teachers' evaluations of using technology and its applications.

Numerical Rating	Scale Range	Verbal Interpretation
4	4.00 – 3.00	Strongly Agree
3	2.99 – 2.00	Agree

2	1.99 – 1.00	Disagree
1	1.00 – 0.99	Strongly Disagree

Ethical Consideration

In this study, several ethical principles were adhered to, including obtaining informed consent from all participants, ensuring voluntary participation, maintaining confidentiality of respondents' information, and minimizing any potential risks associated with the study. Participants was fully informed about the purpose, procedures, and potential risks and benefits of the research before agreeing to participate. Moreover, all data collected was handled with the utmost confidentiality, with measures in place to ensure anonymity and protect participants' privacy.

Research Details

As transparency and accuracy in presenting the research details are paramount for the study, the objectives, methodologies, and potential implications of the research was clearly communicated to all respondents and involved stakeholders, including relevant authorities. This ensures that everyone involved understands the purpose and scope of the study, fostering trust and informed consent.

Details of the Respondents

The researcher respects the privacy and dignity of the respondents from the start to the end of the study process. All personal information collected during the study was handled with utmost confidentiality and was stored in safe storage. Their answers were used solely for research purposes. Measures were also implemented to anonymize and protect the identities of the respondents, reducing the risk of unauthorized disclosure or misuse of sensitive data.

Risks & Risk Management

Safeguarding the welfare of the respondents is the priority of the researcher, and so identifying and mitigating potential risks to both participants and the researcher part is essential for the study's ethical conduct. Protocols was established to minimize risks, including ensuring data security, providing clear instructions for participation, and offering support services for any distress or discomfort experienced during the study.

Confidentiality & Anonymity

The researcher-maintained confidentiality and anonymity and safeguarded the privacy and rights of the respondents throughout the study. All data collected were kept strictly confidential, with access restricted to authorized personnel only. Identifiable information was removed or coded to ensure anonymity, preventing the association of responses with specific individuals. Any reports or publications resulting from the study were aggregate data to further protect anonymity.

Benefits

While no direct material benefits are offered, participants have the opportunity to contribute to meaningful research that has the potential to improve teaching and learning outcomes in secondary schools. Their contributions were acknowledged and appreciated within the study. The study aims to contribute valuable insights into the status and efficacy of DepEd Computerization program in secondary schools in Cagayan de Oro City. Findings from the research may inform policy development, curriculum design, and instructional strategies, benefiting educators, policymakers, and students alike.

CHAPTER 4

Presentation, Analysis, and Interpretation of Data

This chapter presents the results of the study and provides an in-depth analysis of the data collected to address each specific research question.

Problem 1: What is the current status of DepEd Computerization program in secondary schools in Cagayan de Oro City in terms of:

Table 1 below is divided into Table 1.1 the Availability of Computing Devices, Table 1.2 the availability of ICT infrastructure, and Table 1.3 Professional Development Resources, which shows the whole picture of the current status of DepEd Computerization program in secondary schools in Cagayan de Oro City.

1.1 Availability of Computing Devices

Table 1.1 Frequency and Percentage Distribution of the current status of DepEd Computerization program in terms of the Availability of Computing Devices

Computing Devices	Available			Total	
	f	%	VI	f	%
Computer/PC	20	74	Widely Available	27	100
Laptops	24	89	Widely Available	27	100
Tablets	18	67	Widely Available	27	100

Table 1.1 shows the availability of computing devices such as computers, laptops, and tablets in secondary schools within District 1 of Cagayan de Oro City, as reported by ICT coordinators.

Based on the data from ICT coordinators, the highest availability of computing devices in secondary schools in District 1 of Cagayan de Oro City is laptops, with a frequency of 24 or equal to 89% of schools having access to them. This reflects a high level of integration of mobile technology in classrooms, allowing both teachers and students to engage in flexible, interactive learning experiences. The wide availability of laptops suggests that they are a priority in the DepEd Computerization program, ensuring that most schools have the tools needed for effective technology-driven instruction. The variation in device availability across schools may stem from budgetary constraints, procurement issues, and prioritization of resources, as discussed by Rotas & Cahapay (2020) in their analysis of the digital divide in Philippine schools during the COVID-19 shift to online learning.

Following laptops, 20 computers/PCs are available, or equal to 74% of the schools, indicating that most schools have established computer labs where students can develop ICT skills and where teachers can use them for instruction and learning. However, the 26% of schools without computers may face challenges in offering comprehensive digital literacy programs, especially where shared, fixed computing stations are crucial. While these schools still benefit from other devices, addressing this gap could further enhance their capability to deliver ICT education. According to Valiente (2010), providing students with individual computing devices fosters personalized learning experiences, enabling them to engage actively in learning activities. However, in the current study, ICT coordinators reported an unequal distribution of computers across schools, with some institutions having adequate resources while others faced significant shortages.

Tablets have the lowest availability, with only 67% of schools having access to them. Although this is still categorized as "Outstanding," the relatively lower figure suggests that tablets are less prioritized in the program, which could limit opportunities for interactive and personalized learning, especially in schools where younger students or differentiated instruction might benefit from tablet use. Dayagbil et al. (2021) point to logistical and infrastructural challenges that contribute to device shortages, particularly in rural or lower-funded urban areas. This implies that limited or uneven distribution of devices may hinder the full implementation of DepEd Computerization programs, affecting the overall teaching and learning experience. This finding aligns with Hani (2021), who pointed out that without systematic distribution and infrastructure to support proactive technology like tablet usage, the benefits of such devices may not be fully realized.

Overall, the high availability of these devices reflects the district's commitment to integrating technology into education. However, the gaps in device access, particularly for schools lacking laptops or tablets, need to be addressed to ensure equity in learning opportunities. Same with a study of Dayagbil et al. (2021), who found that many secondary schools in the Philippines struggle with device shortages. DepEd's 2024 ICT Roadmap emphasizes that efforts to roll out DepEd Computerization programs require significant government support and funding, but limitations in budget allocations often result in inconsistent distribution of devices across regions. This can explain why some schools may have more devices than others, or why devices may not be regularly updated to support modern educational tools and apps. As a result, policies should focus on providing additional resources to under-resourced schools and ensuring that all teachers are adequately trained to integrate these technologies into their classrooms. Moreover, the ongoing maintenance and sustainability of the program, including technical support for device updates and repairs, should be prioritized to ensure the long-term success of the DepEd Computerization initiative.

1.2 Availability of ICT Infrastructure

Table 1.2 Frequency and Percentage Distribution of the current status of DepEd Computerization program in terms of the Availability of ICT Infrastructure

ICT Infrastructure	Available			Total	
Software	**f**	**%**	**VI**	**f**	**%**
Database programs	13	48	Highly Available	27	100
Security applications	11	41	Highly Available	27	100
MicrosoftOffice/Google Workspace	24	89	Widely Available	27	100
Hardware					
Printer and scanner System	26	96	Widely Available	27	100
Internet	22	81	Widely Available	27	100
Server	12	44	Highly Available	27	100
Systems					
Registration and Admission management	10	37	Highly Available	27	100
Student Inquiries management	6	22	Readily Available	27	100
Entrance Exam/Test management	6	22	Satisfactory	27	100
Library management system	4	15	Limited Availability	27	100
Attendance management system	10	37	Highly Available	27	100

Enrolment system	22	81	Widely Available	27	100
Financial management system	11	41	Highly Available	27	100
Human resources management	9	33	Readily Available	27	100
Report and analytics management	9	33	Readily Available	27	100
Data Center					
Hardware installation and maintenance	11	41	Highly Available	27	100
Backup power systems and archiving	8	30	Readily Available	27	100
Load balancing and Internet access	11	41	Highly Available	27	100
Authentication and authorization	8	30	Readily Available	27	100
Cloud-based	8	30	Readily Available	27	100
Communication Services					
Email	26	96	Widely Available	27	100
Portals	18	67	Widely Available	27	100
Institution Websites	15	56	Widely Available	27	100
Telephone	10	37	Highly Available	27	100

Table 1.2 indicates the availability of ICT infrastructure across different components in secondary schools in District 1 of Cagayan de Oro City. Based on the data, the findings show significant variation across different components.

The highest availability is found in hardware and communication services, particularly with printer and scanner systems and email services, which are available in 96% of schools. Findings indicate that nearly all schools have the necessary hardware for basic document production and communication. Internet access is available in 81% of schools, which highlights a strong foundation for online connectivity, though 19% of schools without it may face challenges in implementing web-based learning or administrative tasks. Bulman and Fairlie (2016) highlight that while DepEd Computerization initiatives aim to ensure that every student has access to a personal learning device, many schools, particularly in underfunded regions, face resource limitations that delay full implementation.

In terms of software, Microsoft Office or Google Workspace is highly available, with 89% of schools having access to these essential tools for productivity, communication, and collaboration, and this level of availability supports a seamless transition to technology-enhanced learning, as these platforms are widely used in education. Ally and Wark (2018) also highlighted that the success of any technology integration program is heavily dependent on the availability and appropriateness of software resources. However, the results of the study determined that more specialized software, such as database programs (48%) and security applications (41%), shows moderate availability, indicating that less than half of the schools are equipped with advanced data management and cybersecurity tools. This could present vulnerabilities in data security and efficient information processing.

The systems category reveals that management tools, particularly those for enrollment (81%), are widely available, helping streamline key administrative processes. However, systems like student inquiries management and entrance exam/test management show low availability, each at only 22%. This means that the majority of schools do not have the infrastructure to automate these processes, potentially increasing the administrative burden. Additionally, library management systems (15%) and attendance management systems (37%) are also limited, which could hinder effective resource management and

student tracking. In the data center category, there is a relatively low availability of key components like backup power systems and archiving (30%) and cloud-based solutions (30%). This could impact schools' ability to ensure data integrity, disaster recovery, and efficient cloud computing. This may be aligned with previous findings by Astri and Gaol (2013), who argue that schools often face difficulty in maintaining and upgrading infrastructure, especially in regions with lower technical expertise or funding.

Finally, in terms of communication services, while institution websites are present in 56% of schools, there is a need for further development to ensure that all schools have an online presence for transparency and information dissemination. Hani (2021) argues that simply having computing devices is not enough; the value lies in the software that supports teaching and learning. Educational software, which includes learning management systems (LMS), e-learning platforms, and subject-specific applications, is essential for engaging students and enabling teachers to deliver interactive and personalized lessons. For example, platforms like Google Classroom, Microsoft Teams, and specialized math or science software have been shown to improve students' understanding and participation.

The implications of these findings suggest that while there is a strong foundation for basic ICT infrastructure, particularly in hardware and communication services, there are notable gaps in more specialized software, systems, and data management tools. Schools with limited access to advanced ICT infrastructure may struggle with administrative efficiency and data security. To address these gaps, future policies should focus on enhancing the availability of systems for management, security, and online platforms to ensure a more comprehensive and secure ICT environment in secondary schools. As William (2018) and Greve and Tan (2021) suggest, policy frameworks should focus on providing consistent and sustainable access to both hardware and support services. This might include government initiatives aimed at improving internet connectivity in rural areas, increasing budgets for device procurement, and hiring more IT personnel to provide technical support.

The availability of ICT infrastructure, such as software, hardware, systems, data centers, and communication services, was also a major focus of the FGD. Many informants pointed out that while internet connectivity was present in most schools, it was often unreliable and insufficient for both administrative and educational purposes. Informant 4 noted that the internet connectivity in their school was limited to administrative use, with no reliable access for students. Informant 11 further explained that the school had allocated funds for internet facilities, but the local provider lacked the necessary infrastructure to offer consistent service. These responses indicate a clear need for investment in infrastructure, particularly in terms of internet connectivity and systems that can support the effective use of technology in the classroom. A total of 13 informants voiced concerns about internet connectivity and lack of resources to support the infrastructure required for a successful one-to-one technology program, while only 6 informants mentioned that their schools had relatively better infrastructure for ICT use.

Additionally, the status of ICT infrastructure (including internet connection and software) was inconsistent, with some schools reporting good connectivity, while others struggled with poor service or lack of resources. Informant 6 noted, "*We have stable internet, but it's only for administrative use, not for students*," whereas Informant 9 commented, "*We have good internet facilities, but the devices and resources are limited.*" This discrepancy shows that the program's success is highly dependent on the school's infrastructure, with schools facing challenges in remote areas or those with limited resources. Therefore, policy implications include the urgent need to improve internet connectivity and allocate sufficient funds for infrastructure development to support the program's goals.

1.3 Professional Development Resources

Table 1.3 below is divided into 1.3.1 Certification programs and 1.3.2 Workshops/Seminars to encapsulate the current status of DepEd Computerization program in terms of the professional development resources in secondary schools in District 1 of Cagayan de Oro City.

Table 1.3.1 Frequency and Percentage Distribution of the current status of DepEd Computerization program in terms of the Professional Development Resources

Professional Development Resources	Available			Not Available		Total	
1.3.1 Certification programs	**f**	**%**	**VI**	**f**	**%**	**f**	**%**
Project Management	5	19	Limited Availability	22	81	27	100
Network Administration	4	15	Limited Availability	23	85	27	100
Cybersecurity	3	11	Limited Availability	24	89	27	100
Software Development	2	7	Limited Availability	25	93	27	100
Data Management	6	22	Readily Available	21	78	27	100
Communication Skills	19	70	Widely Available	8	30	27	100
Technical Skills	15	56	Widely Available	12	44	27	100
Professional Associations	12	44	Highly Available	15	56	27	100
Ongoing Professional Development	11	41	Highly Available	16	59	27	100

Findings show that in terms of certification programs, communication skills training is the most widely available, with 70% of schools offering this resource. This suggests that a significant number of teachers have access to training that enhances their ability to effectively communicate, both in the classroom and in professional environments. Following this, technical skills training is available in 56% of schools, which is crucial for teachers to maintain competency in using and troubleshooting the technology in their classrooms. The availability of these programs indicates a strong foundation for professional development in essential skills related to the DepEd Computerization program.

Other areas of certification, however, show much lower availability. For example, project management training is only available in 19% of schools, and network administration training is available in just 15%. These figures indicate that the majority of teachers are not receiving formal training in managing technology projects or overseeing network systems, which could be critical for the long-term sustainability and efficiency of the technology program. Cybersecurity training is also limited, available in only 11% of schools. This lack of focus on cybersecurity could expose schools to potential risks, as teachers may not be adequately trained to protect student data or prevent cyber threats. Additionally, software development and data management certifications are available in only 7% and 22% of schools, respectively, further highlighting gaps in advanced technical training. The scarcity of these programs suggests that teachers

may not be fully equipped to handle specialized or complex technological tasks, limiting the program's potential impact.

Although the availability of professional associations and ongoing professional development is also somehow very satisfactory, with 44% and 41% of schools providing these resources and how these opportunities allow teachers to stay updated on the latest developments in technology and education, data cannot still be ignored that more than half of the schools lack access to such continuous learning and professional networking because professional development is crucial for the successful integration of technology in education. As Chang (2016) notes, teacher competence in technology is a determinant of program success. Providing certification programs, workshops, and seminars can enhance teachers' confidence and readiness to integrate technology into their teaching practices, which is echoed by Aperribai et al. (2020) regarding the essential components needed for distance learning education.

The availability of computing devices emerged as a major concern during the FGD. Many of the informants reported receiving some form of computing devices, such as laptops or tablets, but there was a notable disparity in the quantity and quality of these devices. While some schools reported receiving an adequate number of devices, others mentioned receiving outdated or malfunctioning equipment that hindered their ability to integrate technology into the classroom. For instance, Informant 1 shared their experience of receiving a tablet three years ago, which was an old model and constantly malfunctioned, while Informant 3 mentioned that the division of Cagayan de Oro provided laptops, but the number was insufficient to meet the needs of all learners. This highlights a significant gap in the distribution of resources, with some schools having limited access to technology, thus impeding the effectiveness of the one-to-one technology program. The responses here were divided, with some informants reporting a positive experience with the devices, while others highlighted issues with insufficient or poor-quality equipment. Many reported that schools received various types of ICT resources, such as laptops, tablets, and internet connectivity. However, the availability and condition of these resources varied significantly across schools. Informant 1 mentioned, "*We were given a tablet three years ago, but it's outdated and often malfunctions*," while Informant 3 highlighted, "*The division provided laptops, but the quantity is not enough to cater to all the learners."*

Notably, 17 of the 27 informants emphasized the lack of sufficient devices or the poor condition of the devices provided, while 10 others noted that although the devices were adequate, more could be done to ensure consistency across schools. This contrast underscores the need for policy changes that prioritize equitable distribution of resources, ensuring that all schools, particularly those in underserved areas, receive sufficient and functional devices to support their educational goals.

1.3.2 Workshops/Seminars			
	Workshops/Seminars	f	%
Workshop/Seminars Identified	DICT	4	16
	INSET	2	7
	LIS	2	8
	Robotics Workshop	2	8
	None	17	63

1.3.2 Workshops/Seminars			
	Workshops/Seminars	f	%
Conducting Agency	DICT	7	27
	NTC/TelCom	1	4
	TESDA	1	4
	VSTP	1	4
	None	17	63
No. of hours	0 - 8hrs	5	50
	9 - 16hrs	2	20
	17 - 24hrs	2	20
	25 - 32hrs	1	10

On the other hand, for workshops and seminars, the data reveals a significant gap, as 63% of schools reported no workshops or seminars related to the DepEd Computerization program. Of the remaining schools, only a small portion has access to relevant training, with CSS workshops, DICT workshops, and INSET seminars each having participation rates of 4-7%. Furthermore, conducting agencies such as DICT and DepEd are involved in some workshops, but again, the majority of schools (63%) reported no involvement in such programs. This lack of professional development opportunities can hinder teachers from staying current with emerging technology trends, thus limiting their effectiveness in utilizing the technology provided.

The total number of hours allocated to these workshops and seminars also varies, with the most common duration being 16-24 hours (20% each), while other workshops range between 4-32 hours. This inconsistency in professional development duration could mean that teachers are receiving unequal levels of training across schools, potentially leading to disparities in technology adoption and usage in classrooms. According to Aperribai et al. (2020), the essential components for effective distance learning include training and technology competency. Regular workshops can facilitate hands-on experiences with new software and hardware, allowing teachers to explore innovative teaching methods that leverage technology. Furthermore, these collaborative settings foster a community of practice where educators can share challenges and successes, thereby enriching their professional learning experiences.

The findings from Table 1.3 suggest that while there is a solid foundation in basic professional development resources like communication and technical skills, there is a significant lack of access to more specialized certifications and ongoing development. This disparity could limit the effectiveness of the DepEd Computerization program, as many teachers may not be fully prepared to implement advanced technological solutions or manage ICT infrastructure. To address these gaps, policies should aim to increase the availability of specialized certifications, particularly in cybersecurity, project management, and data management, to ensure that teachers have the necessary skills to support and sustain the program. Additionally, a focus on expanding workshop and seminar opportunities, especially those conducted by

government agencies like DICT and DepEd, would help improve teachers' engagement with the technology and enhance the overall success of the program.

Problem 2: What is the profile of the teachers that receive the computing device in terms of:

Table 2 below is divided into Table 2.1 Years of experience, Table 2.2 Subjects taught, and Table 2.3 Year level taught, which shows the profile of the teachers that receive the computing device.

2.1. Years of experience

Table 2.1 Frequency and Percentage Distribution of Teachers' Profile in terms of Years of experience

Years of Experience	f	%
1-3 years	26	14
1-3 years	1	1
10 years and above	88	47
4-6 years	52	28
4-6 years	1	1
7-9 years	20	11
7-9 years	1	1
Total	189	100

Table 2.1 presents the profile of the teachers who received computing devices in terms of years of experience.

The largest group consists of teachers with 10 years and above of experience, making up 47% of the recipients. This indicates that nearly half of the computing devices were provided to more experienced teachers, which suggests that the program may be prioritizing individuals who have spent a significant amount of time in the profession. These teachers likely possess a deep understanding of classroom management and pedagogy, which could enhance their ability to integrate technology effectively into their teaching practices. The second largest group consists of teachers with 4-6 years of experience, accounting for 28% of the recipients. This group represents mid-career professionals who may have already developed substantial teaching expertise but are still in a phase where they can adapt and learn new technologies. This group is well-positioned to benefit from the technology, as they are likely to be open to integrating digital tools in their classrooms while still building on their teaching strategies.

Teachers with 1-3 years of experience comprise 14% of the recipients. These are newer educators who are likely to be more familiar with modern teaching tools and may adapt quickly to using technology in the classroom. However, their relatively limited experience may pose some challenges in balancing traditional teaching techniques with the demands of digital learning environments. Finally, teachers with 7-9 years of experience make up the smallest proportion, at 11%. While this group is more experienced than newer teachers, they are fewer in number, which may indicate that fewer teachers in this range applied for or received devices. It is also possible that they may have previously acquired computing devices through other programs or initiatives. Understanding the distribution of years of experience among teachers in the

program will provide insights into their readiness and capacity to implement DepEd Computerization effectively because experienced teachers might have established teaching methods and may be less inclined to adapt to new technologies unless they perceive a clear benefit (William, 2018). On the other hand, novice teachers may be more open to utilizing technology as they navigate their teaching methodologies (Chang, 2016).

Overall, the distribution of computing devices skews toward more experienced teachers, which could reflect an effort to equip those who have a more established role in schools and are likely to serve as mentors or leaders in integrating technology. However, the representation of less experienced teachers, particularly those in the 1-3 year range, highlights the need for additional support and professional development to ensure they can effectively use the devices in their teaching. The implication of this distribution suggests that while the program is inclusive of various levels of teaching experience, there may be a need to balance the allocation of resources so that both veteran and newer teachers can equally contribute to the success of the DepEd Computerization program. This balance would ensure that all teachers, regardless of experience level, have the opportunity to integrate technology effectively into their classrooms, ultimately benefiting students of all grade levels.

Professional development, particularly in ICT, was another critical theme discussed in the FGD. Several informants noted that while some teachers had undergone training, it was often inadequate or insufficient to meet the needs of all staff. For example, Informant 14 mentioned that despite providing two-hour training sessions on Microsoft 365, many teachers failed to retain the information, particularly older teachers who were less familiar with technology. Informant 17 highlighted the need for more intensive training, especially in areas such as integrating technology into lesson plans and troubleshooting basic ICT issues. Informant 22 also stressed the importance of continuous, hands-on training, noting that teachers would benefit from more sustained and personalized professional development. Interestingly, 18 informants acknowledged the need for more extensive and regular training programs, while only 9 felt that the existing training sessions had been somewhat effective. The inconsistency in responses suggests that the current approach to teacher training may not be comprehensive enough to meet the needs of all teachers, especially those less familiar with technology. The findings underscore the necessity of revising policies to ensure that teacher training programs are more frequent, inclusive, and tailored to the diverse skill levels of educators.

2.2. Subjects taught

Table 2.2 Frequency and Percentage Distribution of Teachers' Profile in terms of Subjects taught

Subjects taught	f	%
Araling Panlipunan	30	0.16
ESP	1	0.01
English	40	0.21
Filipino	18	0.10
MAPEH	15	0.08
Mathematics	32	0.17
Science	32	0.17

Subjects taught	f	%
TLE	20	0.11
TLE	1	0.01
Total	189	100

Based on Table 2.2, which examines the distribution of teachers' profiles in terms of subjects taught, the data shows that English is the most commonly taught subject among the teachers who received computing devices, with 21% of the total. This suggests a strong focus on equipping English teachers with technology, possibly to enhance students' language skills through digital tools such as online resources, multimedia presentations, and language learning applications.

Mathematics and Science follow closely, with each subject representing 17% of the total. The significant proportion of Math and Science teachers receiving devices reflects the growing emphasis on integrating technology into STEM (Science, Technology, Engineering, and Mathematics) education. Digital tools can greatly enhance learning in these subjects through simulations, problem-solving software, and interactive platforms, helping students better understand complex concepts. Teachers of STEM (Science, Technology, Engineering, and Mathematics) subjects might be more inclined to leverage technology, as these subjects often align with the use of digital tools for enhanced learning (Yaniawati et al., 2020).

Conversely, educators in subjects traditionally reliant on textual resources may face challenges in integrating technology without proper training or resources (Agaloos et al., 2020). Based on the results of the study, Araling Panlipunan is the next most commonly taught subject, making up 16% of the total, which indicates a focus on integrating technology into social studies, potentially to provide access to digital archives, historical databases, and other resources that enrich the learning experience in history and culture. TLE (Technology and Livelihood Education) accounts for 11% of the total, highlighting its importance in equipping students with practical skills related to technology, entrepreneurship, and livelihood. The access to computing devices can greatly aid in the hands-on, applied learning that is central to TLE education.

Meanwhile, subjects like Filipino (10%), MAPEH (Music, Arts, Physical Education, and Health) (8%), and ESP (Education sa Pagpapakatao) (1%) have lower proportions of teachers receiving computing devices. While these subjects are integral to a well-rounded education, the lower percentage of teachers receiving devices may suggest that these areas are perceived to require fewer technological resources, or they may be receiving devices through other means. This is crucial to understand because effective technology integration in these subjects not only enhances practical skills but also aligns with industry standards (Bdair, 2020).

Overall, the distribution indicates a strong alignment with national educational priorities, particularly in English and STEM subjects. The relatively lower proportions in subjects like Filipino and MAPEH may suggest the need for additional support to ensure that all subject areas can benefit from the DepEd Computerization program, fostering a more holistic approach to integrating technology across the curriculum. As seen in the literature, teachers' attitudes, experiences, and competencies with technology can influence the successful integration of these tools into their teaching practices (Aperribai et al., 2020; Bdair, 2020).

2.3 Year level taught

Table 2.3 Frequency and Percentage Distribution of Teachers' Profile in terms of Year level taught

Year Level Taught	f	%
Grade 10	43	23
Grade 7	56	30
Grade 8	50	26
Grade 9	39	21
Grade7	1	1
Total	189	100

In terms of year levels taught in Table 2.3, the data shows that the highest proportion of teachers receiving computing devices teach Grade 7 (30%), followed by Grade 8 (26%) and Grade 10 (23%). This distribution suggests that the early high school years are a key focus of the DepEd Computerization program, likely due to the critical role these grades play in laying the foundation for advanced learning. Equipping teachers in these levels with technology allows them to better engage students who are transitioning into more complex subject matter and learning environments. Teachers' subjects and year levels taught can significantly affect their engagement with technology, because according to Chang (2016), the impact of DepEd Computerization is more pronounced in classrooms where teachers possess the necessary technological knowledge to guide students in collaborative and creative projects.

Grade 9 teachers account for 21% of the total, indicating a somewhat even distribution of computing devices across the higher grade levels. The close distribution across grades suggests that the program aims to provide equal access to technology across all high school levels, ensuring that no particular group is left out. The relatively even spread of devices across different year levels ensures that students in various stages of high school education will have access to technology-enhanced learning environments. This approach reflects an inclusive strategy, enabling both younger and older students to benefit from digital learning tools, regardless of their grade level. The findings imply that the DepEd Computerization program is focused on creating a seamless integration of technology throughout the high school journey, supporting both academic and practical skill development for all students.

Problem 3: What are the teachers' experiences in terms of:

Table 3 below is divided into Table 3.1 Condition of the devices received and Table 3.2 Use of technology in the classroom, which shows the experience of the teachers that receive the computing device.

3.1 Condition of the devices received

Table 3.1 Mean and Standard Deviation Distribution of Teachers' Experiences in terms of Condition of the devices received

Condition of the devices received	N	Mean	SD	Verbal Interpretation
1. Word processing	189	4.26	0.84	Excellent
2. Spreadsheets	189	4.01	0.95	Excellent
3. Publisher	189	3.43	1.17	Very Good
4. Email	189	4.31	0.90	Excellent
5. Class shares/ G-drive	189	3.95	1.00	Very Good
6. Microsoft application	189	4.02	0.91	Excellent
7. Online library	189	2.95	1.09	Good
8. Search engines, e.g., Google chrome	189	4.24	0.93	Excellent
9. School portals	189	3.69	0.95	Very Good
10. Online services, e.g., registration, pay fees	189	3.75	1.16	Very Good
11. Social media platform, e.g., Facebook	189	4.32	0.82	Excellent
12. Blogs	189	3.14	1.12	Very Good
Total	189	3.84	0.71	Very Good

Table 3.1 reveals the teachers' experiences with the condition of the devices they received, ranked from highest to lowest mean.

The item "*Social media platform, e.g., Facebook"* had the highest mean of 4.32 (SD = 0.82), which is interpreted as Excellent. This suggests that teachers found social media platforms to be in excellent condition and user-friendly, likely because of the familiarity and regular usage of these platforms in their personal and professional lives. *"Email"* (Mean = 4.31, SD = 0.90) and *"Word processing"* (Mean = 4.26, SD = 0.84) followed closely, also rated as Excellent. This high rating indicates that email systems and word processing software (such as Microsoft Word or Google Docs) were highly functional and met teachers' needs for communication and document creation.

Similarly, "*Search engines, e.g., Google Chrome"* had a mean of 4.24 (SD = 0.93), which is also interpreted as Excellent, which shows that teachers had a very positive experience using browsers and search engines to access information and resources. *"Microsoft application"* (Mean = 4.02, SD = 0.91) and *"Spreadsheets"* (Mean = 4.01, SD = 0.95) were also rated Excellent, showing that spreadsheet tools (like Excel or Google Sheets) and Microsoft apps were in great condition and useful for organizing and analyzing data. The condition of the devices provided is crucial for their effective use in the classroom because other findings suggest that issues with device condition may hinder the potential benefits of DepEd Computerization (William, 2018).

At the lower end of the scale, *"Online library"* had the lowest mean of 2.95 (SD = 1.09), which is interpreted as Good, suggesting that online libraries or resource platforms were less reliable or accessible than other tools and indicating a possible area for improvement. *"Blogs"* (Mean = 3.14, SD = 1.12) and

"*Class shares/Google Drive*" (Mean = 3.95, SD = 1.00) received Very Good ratings, reflecting generally positive experiences but with room for improvement. Overall, the total mean was 3.84, with a standard deviation of 0.71, which is interpreted as Very Good. The high mean values, especially for communication and productivity tools, imply that the devices provided were generally in good condition and met the basic needs of teachers for classroom-related tasks.

3.2 Use of technology in the classroom

Table 3.2 Mean and Standard Deviation Distribution of Teachers' Experiences in terms of Use of technology in the classroom

Use of technology in the classroom	N	Mean	SD	Verbal Interpretation
1. My current skill level using technology to plan instruction.	189	3.08	0.69	Advanced High Level
2. My current skill level using technology to deliver classroom instruction.	189	3.14	0.66	Advanced High Level
3. My current skill level using technology to enhance student learning.	189	3.05	0.71	Advanced High Level
4. My current skill level using technology to accommodate the different learning styles of my students.	189	3.00	0.68	Advanced High Level
5. My current skill level using technology to provide differentiated instruction for my students.	189	2.97	0.67	Advanced Level
6. My current skill level using technology applications to enhance my students' information literacy and technology skills.	189	2.97	0.68	Advanced Level
7. My current skill level using technology applications to enhance my students' communication skills.	189	3.02	0.68	Advanced High Level
8. My current skill level using technology applications to improve my students' abilities to collaborate on learning experiences.	189	2.97	0.68	Advanced Level
9. My current skill level using technology applications to help my students to analyze arguments, claims or evidence.	189	2.84	0.71	Advanced Level

Use of technology in the classroom	N	Mean	SD	Verbal Interpretation
10. My current skill level using technology applications to help my students make inferences using inductive/deductive reasoning,	189	2.87	0.71	Advanced Level
11. My current skill level using technology applications to help my students evaluate text.	189	2.96	0.72	Advanced Level
12. My current skill level using technology applications to help my students make decisions.	189	2.90	0.67	Advanced Level
13. My current skill level using technology applications to help my students identify problems.	189	2.93	0.70	Advanced Level
14. My current skill level using technology applications to help my students generate ideas.	189	2.97	0.70	Advanced Level
15. My current skill level using technology applications to help my students solve problems.	189	2.87	0.70	Advanced Level
16. My current skill level using technology applications to encourage group work among students.	189	3.05	0.67	Advanced High Level
17. My current skill level using technology to encourage my students to share ideas and to listen to other students' perspectives.	189	3.01	0.68	Advanced High Level
18. My current skill level using technology to encourage my students to seek new ways of clarifying differences and resolving problems in their group.	189	2.94	0.67	Advanced Level
19. My current skill level using technology to allow my students to construct new understandings and learning by engaging in group work.	189	2.94	0.72	Advanced Level
20. My current skill level to experiment with technology to create unique instructional materials.	189	2.92	0.71	Advanced Level

Use of technology in the classroom	N	Mean	SD	Verbal Interpretation
Total	189	2.97	0.59	Advanced Level

Table 3.2 focuses on teachers' use of technology in the classroom, with the highest mean indicating the most positive experiences.

The highest-rated item was "*My current skill level using technology to deliver classroom instruction"* with a mean of 3.14 (SD = 0.66), which suggests that teachers felt confident in their ability to use technology effectively for teaching and delivering lessons. Next, *"My current skill level using technology to plan instruction"* (Mean = 3.08, SD = 0.69) and *"My current skill level using technology to encourage group work among students"* (Mean = 3.05, SD = 0.67) were also rated as Advanced High Level. These scores indicate that teachers are skilled at using technology to plan lessons and foster collaboration among students. The ability to access a diverse range of resources through technology facilitates creativity and innovation in teaching methodologies, because the integration of technology into classroom instruction fosters engagement and interaction among students, thereby enhancing learning experiences (Yaniawati et al., 2020).

At the lower end of the scale, *"My current skill level using technology applications to help my students to analyze arguments, claims or evidence"* (Mean = 2.84, SD = 0.71) received the lowest score, interpreted as Advanced Level, suggesting that teachers feel less confident in using technology for tasks that require critical thinking and analysis and highlighting a need for professional development in these areas. Other areas such as *"Using technology to help students make inferences"* (Mean = 2.87, SD = 0.71) and *"Using technology to solve problems"* (Mean = 2.87, SD = 0.70) were also rated as Advanced Level. These lower scores suggest that while teachers are proficient in using technology for instruction and collaboration, they may struggle with applying it to deeper cognitive tasks like reasoning, problem-solving, and critical analysis.

The total mean of 2.97 (SD = 0.59) indicates that, overall, teachers rated their skill level in using technology as Good. While there are areas of strength, particularly in delivering lessons and encouraging group work, the findings suggest that teachers would benefit from additional training in using technology to enhance critical thinking and problem-solving skills in their students. The use of technology in the classroom not only enhances academic learning but also supports the development of 21st-century skills, such as critical thinking, communication, and creativity (Aperribai et al., 2020). Teachers recognize that students equipped with these skills are better prepared for the challenges of the modern workforce.

Problem 4: How do teachers evaluate the instructional value of DepEd Computerization program in terms of:

Table 4 below is divided into Table 4.1 Beliefs about technology use for classroom instruction and Table 4.2 Beliefs about technology use for student learning, which shows the evaluation of the teachers on the instructional value of DepEd Computerization program.

4.1 Beliefs about technology use for classroom instruction

Table 4.1 Mean and Standard Deviation Distribution of Teachers' Evaluation to Instructional Value of DepEd Computerization program in terms of Beliefs about technology use for classroom instruction

Beliefs about technology use for classroom instruction	N	Mean	SD	Verbal Interpretation
1. Technology applications help my students ask and answer questions for clarification.	189	3.42	0.56	Strongly Agree
2. Technology applications help my students define terms.	189	3.50	0.55	Strongly Agree
3. Technology applications help my students identify assumptions.	189	3.35	0.58	Strongly Agree
4. Technology applications help my students interpret and explain concepts and ideas.	189	3.42	0.58	Strongly Agree
5. Technology applications help my students make predictions.	189	3.32	0.61	Strongly Agree
6. Technology applications help my students see both sides of an issue.	189	3.39	0.55	Strongly Agree
7. Technology use in the classroom increases my students' flexibility in responding to others and events.	189	3.38	0.58	Strongly Agree
8. Technology use in the classroom increases my students' desire to be well-informed.	189	3.47	0.61	Strongly Agree
9. Technology use in the classroom increases my students' respect for others' viewpoints.	189	3.30	0.61	Strongly Agree
10. Technology use in the classroom increases my students' inquisitiveness.	189	3.33	0.58	Strongly Agree
11. Technology use in the classroom increases my students' propensity to seek reason.	189	3.34	0.59	Strongly Agree
12. Technology use in the classroom increases my students' background knowledge.	189	3.38	0.58	Strongly Agree
13. Technology use in the classroom increases my students' intrinsic motivation.	189	3.37	0.58	Strongly Agree
14. Technology use in the classroom increases my students' willingness to take intellectual risks, such as sharing tentative ideas.	189	3.39	0.61	Strongly Agree
15. Technology use in the classroom increases my students' willingness to learn new things.	189	3.45	0.58	Strongly Agree

Beliefs about technology use for classroom instruction	N	Mean	SD	Verbal Interpretation
16. Technology use in the classroom increases my students' willingness to take risks and make mistakes.	189	3.34	0.62	Strongly Agree
Total	189	3.38	0.47	Strongly Agree

Table 4.1 presents the teachers' evaluation of the instructional value of the DepEd Computerization program, ranked from highest to lowest mean in terms of their beliefs about technology use for classroom instruction.

The highest-rated item, *"Technology applications help my students define terms"*, had a mean of 3.50 (SD = 0.55), interpreted as Strongly Agree. This suggests that teachers believe technology is especially effective in helping students understand and define terms, which is foundational for learning new concepts. Following closely, *"Technology use in the classroom increases my students' willingness to learn new things"* (Mean = 3.45, SD = 0.58) and *"Technology use in the classroom increases my students' desire to be well-informed"* (Mean = 3.47, SD = 0.61) were also highly rated. These results indicate that teachers strongly agree that technology motivates students to stay curious and learn beyond the classroom.

On the lower end, *"Technology use in the classroom increases my students' respect for others' viewpoints"* had a mean of 3.30 (SD = 0.61), though still interpreted as Strongly Agree. This score, while still positive, suggests that this area could benefit from more emphasis on the collaborative and inclusive use of technology. Teachers' beliefs about technology's role in classroom instruction play a significant role in determining how they integrate these tools into their teaching practices, as research indicates, that when teachers view technology as a valuable resource for enhancing pedagogical approaches, they are more likely to adopt innovative instructional strategies (Agaloos et al., 2020).

The total mean for this section was 3.38, with a standard deviation of 0.47, which translates to a strong overall belief in the value of technology for classroom instruction. The relatively high ratings across the board show that teachers feel confident in the benefits of integrating technology into their teaching practices. This belief can lead to the incorporation of technology for collaborative learning, interactive lessons, and differentiated instruction, ultimately enriching the educational experience for students. A positive attitude towards technology is associated with higher levels of student engagement and motivation, as teachers harness digital tools to create more dynamic and personalized learning environments (Hernando-Malipot, 2021).

4.2 Beliefs about technology use for student learning

Table 4.1 Mean and Standard Deviation Distribution of Teachers' Evaluation to Instructional Value of DepEd Computerization program in terms of Beliefs about technology use for student learning

Beliefs about technology use for student learning	N	Mean	SD	Verbal Interpretation
17. Technology use in the classroom increases my students' openness to new ideas.	189	3.54	0.54	Strongly Agree
18. Technology use in the classroom increases my students' tolerance of ambiguity.	189	3.39	0.58	Strongly Agree
19. Technology use in the classroom increases my students to generate new and meaningful ideas.	189	3.47	0.56	Strongly Agree
20. Technology use as part of group work encourages students to give and receive help among peers.	189	3.49	0.57	Strongly Agree
21. Technology use for classroom instruction increases my students reading achievement.	189	3.47	0.57	Strongly Agree
22. Technology use for classroom instruction increases my students writing abilities.	189	3.37	0.63	Strongly Agree
23. Observation of teachers modeling the use of technology is an effective professional learning tool.	189	3.47	0.55	Strongly Agree
24. Having technology coaching supports my incorporation of technology into my instruction.	189	3.48	0.54	Strongly Agree
25. Having technical support readily available facilitates me incorporating technology into my instruction.	189	3.48	0.54	Strongly Agree
26. Professional learning programs on technology have increased my competence to use technology in my classroom.	189	3.51	0.55	Strongly Agree
27. Professional learning about integrating educational technologies into instruction should have follow-up provisions.	189	3.49	0.57	Strongly Agree
28. Technology has increased my teaching effectiveness.	189	3.53	0.54	Strongly Agree
29. The use of technology applications motivates my students to learn.	189	3.54	0.56	Strongly Agree
30. The use of technology in the classroom increases my students' technology skills.	189	3.55	0.54	Strongly Agree
31. The use of technology in the classroom increases my students' skill to use and evaluate content found on the internet.	189	3.52	0.55	Strongly Agree

Beliefs about technology use for student learning	N	Mean	SD	Verbal Interpretation
Total	189	3.49	0.46	Strongly Agree

Table 4.2 focuses on the teachers' beliefs about the use of technology for student learning.

The highest-rated item, *"The use of technology in the classroom increases my students' technology skills"*, had the highest mean of 3.55 (SD = 0.54), indicating Strongly Agree, which suggests that teachers believe that technology significantly enhances students' technology-related skills, such as navigating software, applications, and the internet. *"Technology use in the classroom increases my students' openness to new ideas"* (Mean = 3.54, SD = 0.54) and *"The use of technology applications motivates my students to learn"* (Mean = 3.54, SD = 0.56) were also highly rated as these high ratings reflect the teachers' strong belief that technology fosters creativity, curiosity, and engagement in learning. The perception of technology as a facilitator of student learning is also crucial, as highlighted by Bulman and Fairlie (2016), providing equitable access to technology can enhance learning opportunities, especially for underprivileged students. This underscores the importance of fostering positive attitudes toward technology, which can contribute to higher student achievement and engagement.

On the other hand, at the lower end, *"Technology use for classroom instruction increases my students' writing abilities"* had a mean of 3.37 (SD = 0.63), which, while still rated "Strongly Agree," suggests that improvements could be made in using technology to develop students' writing skills. Educators who recognize that technology can facilitate deeper learning, improve critical thinking skills, and promote creativity are more inclined to integrate it effectively (Bulman & Fairlie, 2016). For example, teachers may use digital platforms for project-based learning, enabling students to collaborate, research, and present their findings using various multimedia formats. This approach not only enhances student engagement but also prepares them for a technology-driven workforce.

Furthermore, the results determined the total mean for this section was 3.49 with a standard deviation of 0.46, showing that teachers strongly agree on the instructional value of technology in enhancing student learning across multiple domains. Overall, the results indicate that teachers view technology as a powerful tool for improving student skills, fostering collaboration, and increasing motivation. Teachers who believe in technology's potential to cater to diverse learning styles and needs are likely to implement differentiated instruction more effectively because by utilizing various technological resources, teachers can address students' individual learning preferences, ensuring that all students have equitable opportunities to succeed (Aperribai et al., 2020). The incorporation of adaptive learning technologies can further personalize education, providing tailored support for students with varying levels of understanding.

Overall, the findings emphasize the importance of addressing ICT infrastructure and investing in professional development to maximize the effectiveness of DepEd Computerization initiatives in education. Schools should prioritize infrastructure enhancements and professional development to maximize the benefits of technology in education, for the improvement of teaching and learning experiences of both the teachers and students. Future efforts could also focus on regular assessments of technology resources and their alignment with teachers' needs and pedagogical practices of DepEd Computerization program (Marshall, 2021).

The results from the Focused Group Discussion (FGD) with 27 ICT coordinators in secondary schools in Cagayan de Oro City also provided a comprehensive view of the current status and instructional value of the DepEd Computerization Program (DCP). Resource allocation for the DepEd Computerization Program was a major theme of the discussion, with several informants emphasizing the challenges schools face in securing enough funding for devices and infrastructure. Informant 3 noted that while laptops were provided in previous years, there were not enough to meet the demand, and some schools lacked the necessary facilities to store and maintain these devices. Similarly, Informant 12 reported that despite having a budget for internet facilities, the local internet provider was unable to offer reliable service, further limiting the use of technology in the classroom. These concerns were echoed by 14 other informants who highlighted issues related to resource constraints, such as limited funds, outdated equipment, and insufficient technical support. While 8 informants mentioned that their schools had received funding or devices through the DepEd Computerization Program, the disparity in responses underscores the need for a more structured and equitable approach to resource allocation. To address these disparities, policymakers should consider revising the funding model to ensure that schools, especially those in underserved or remote areas, receive adequate resources to fully implement the program.

While some schools have had positive experiences with the program, many faces significant barriers related to resource allocation, infrastructure, teacher training, and device management. The responses from the ICT coordinators underscore the importance of equitable distribution of resources, sustained professional development for teachers, and investments in infrastructure to ensure the program's success. Based on these findings, policy implications include the need for a more structured and equitable approach to resource allocation, the development of comprehensive training programs for teachers, and the establishment of systems for ongoing support and maintenance of ICT equipment. many informants proposed strategies for improving the DepEd Computerization Program. Informant 9 suggested that teacher training workshops and seminars should be made mandatory to ensure that all educators are equipped to integrate technology into their teaching. Informant 18 recommended developing a clear policy that outlines device management, maintenance, and usage guidelines, while Informant 13 emphasized the need for a dedicated agency to oversee the upgrading and maintenance of ICT systems in schools. A common recommendation across the FGD was the need for a more sustainable and long-term approach to the program, which includes regular maintenance, more localized training, and improved infrastructure.

CHAPTER 5

Summary, Findings, Conclusions, and Recommendations

This chapter presents the overview of the findings of the study focused on the status and instructional value of the DepEd Computerization program in secondary schools in Cagayan de Oro City. It also presents the conclusion and recommendation based on the findings of the study.

Summary

The study investigated various aspects, including the availability of computing devices, ICT infrastructure, the professional development resources available, teachers' experiences with the computing devices provided, their profiles, and their beliefs regarding the use of technology in the classroom. Ultimately, the research sought to identify any significant relationships in the status of DepEd Computerization Program and its instructional value in secondary schools at Cagayan de Oro City.

The responses of ICT coordinators suggest that the implementation of the DCP is uneven across secondary schools in Cagayan de Oro City as while some schools have received adequate resources, others face

challenges related to the quality and quantity of devices. The disparity in resource allocation could be due to differences in funding availability and the capacity of local divisions to ensure equitable distribution. Schools in more urban or resource-rich areas tend to report better access to devices and infrastructure, while those in rural or underserved areas encounter significant difficulties. This inconsistency points to the need for policies that ensure the equitable distribution of resources. An effective policy should not only provide devices but also ensure that infrastructure, including reliable internet and functional equipment, is prioritized to support the program's goals.

Findings

In accordance with answering research questions, the following findings are presented in order.

1. Current Status of DepEd Computerization Program

The study found that the current status of the DepEd Computerization program in secondary schools in Cagayan de Oro City is generally positive. In terms of availability, computing devices such as computers, laptops, and tablets are adequately provided, ensuring that schools are equipped for technology integration. However, the availability of ICT infrastructure shows some inconsistencies; while software and communication services are sufficiently available, there are gaps in hardware and systems, as well as inconsistent access to data centers. Regarding professional development resources, schools offer various certification programs and workshops, which are essential for equipping teachers with the necessary skills and knowledge to effectively utilize technology in their teaching.

2. Profile of Teachers Receiving Computing Devices

The profile of teachers who received computing devices indicates a diverse group in terms of years of experience, subjects taught, and year levels. Teachers range from early-career educators to those with extensive experience, teaching a variety of subjects across different grade levels. This diversity suggests that the DepEd Computerization program caters to a broad spectrum of teaching staff, which can enhance the overall effectiveness of technology integration within the classroom.

3. Experiences of Teachers Receiving Computing Devices

In terms of the experiences of teachers receiving the computing devices, findings reveal that most educators report favorable conditions of the devices. The devices are generally in good working order, facilitating their use in teaching. Furthermore, while teachers feel confident using technology in the classroom, there remains room for improvement in fostering collaborative and critical thinking skills among students.

4. Teachers' Evaluation of Instructional Value of DepEd Computerization program

Teachers express strong beliefs about the instructional value of the DepEd Computerization program, indicating that technology significantly enhances both classroom instruction and student learning. They believe that technology applications support various aspects of learning, such as asking questions, defining terms, and making predictions. The majority of teachers strongly agree that technology increases students' openness to new ideas and improves their academic achievements.

Conclusions

This study assessed the status and instructional value of the DepEd Computerization Program in secondary schools in Cagayan de Oro City. The results show that there is a good availability of computing devices, and teachers generally believe these tools enhance classroom instruction. However, there are still important gaps in the infrastructure and professional development needed to support effective technology

use, as the availability of ICT infrastructure and professional development resources does not significantly predict the instructional value of the technology program regarding classroom instruction.

Teachers come from various backgrounds, with different levels of experience and subjects taught. Most of them reported positive experiences with the devices and how they use technology in their classrooms, though some areas need improvement. The study also found that more experienced teachers have different experiences with the devices, indicating that their familiarity may influence how they benefit from the program.

Importantly, the overall status of the DepEd Computerization program significantly affects its perceived instructional value, particularly in how technology supports both teaching and learning, which highlights the need for ongoing improvements to the resources and support available for teachers. However, teachers' beliefs about technology use for classroom instruction do not significantly influence the perceived instructional value of the DepEd Computerization program, which may suggest that merely providing resources and training is insufficient; effective integration into teaching practices is essential to enhance learning outcomes.

Using Stakeholder Theory in this study can help us understand the different ways teachers interact with the DepEd Computerization program. By treating teachers as important participants, researchers can collect useful data through surveys that look into how teachers feel about using technology in their classrooms. This method helps us see what affects teachers' willingness to accept and use technology, as well as the challenges they might face. Involving teachers in the research also makes them feel valued and gives them a sense of ownership over the technology initiative. This can lead to a stronger commitment to making it successful.

The benefits of using Stakeholder Theory go beyond just this study. It can help create practical strategies and policies for better technology use in secondary schools. By recognizing teachers as key players and including their views in decision-making, school leaders can develop more effective ways to support technology initiatives. This might mean providing training, ongoing help, and encouraging teamwork and creativity. In the end, focusing on teachers as stakeholders can lead to technology programs that are more inclusive, sustainable, and effective, meeting the varied needs of teachers and improving student learning.

In summary, the DepEd Computerization program has the potential to improve education in Cagayan de Oro City, but addressing the identified gaps is essential for maximizing its benefits. Schools should learn the importance of equipping educators not just with resources but with the necessary training and support to effectively incorporate technology into their teaching practices. For the program to achieve its intended outcomes, continuous professional development and a focus on pedagogical integration are crucial.

Recommendation

Based on the findings of the study, various stakeholders—school administrators, teachers, policymakers, and future researchers—should collaborate on the following recommendations to enhance the DepEd Computerization program in secondary schools in Cagayan de Oro City.

First, school administrators should prioritize ongoing professional development that equips teachers with the skills to effectively integrate technology into their teaching practices. This can be achieved through regular workshops and mentorship programs that pair experienced educators with those less familiar with technology. They should prioritize the development of a national framework for continuous ICT training for educators, with funding allocated specifically for this purpose. This would involve creating policies that require and fund ongoing training programs, webinars, and workshops that are easily accessible to

teachers. Additionally, policy changes should promote the use of technology-specific teacher incentives, such as recognition or career advancement, to encourage active participation. Key stakeholders, including DepEd, local school divisions, and teacher unions, must work together to ensure that teacher capacity-building efforts are not just one-time events, but part of an ongoing process integrated into educators' career development.

Second, policymakers must ensure sufficient funding and resources for robust ICT infrastructure, including software and hardware that meet the needs of both teachers and students. One of the most pressing issues identified was the disparity in resources, particularly in terms of ICT infrastructure, among schools. Policymakers should consider revising allocation formulas to ensure more equitable distribution, particularly for schools in underserved or rural areas. Policy adjustments must take into account the specific needs of these schools to bridge the digital divide. Stakeholders like the Department of Education (DepEd), local government units (LGUs), and the Department of Budget and Management (DBM) should collaborate in advocating for a more targeted and needs-based funding approach. This policy shift would help ensure that all schools have access to necessary ICT resources, creating a more level playing field for students and educators across the country.

A significant challenge highlighted during the FGD was the insufficient budget allocated for ICT-related resources, especially in schools that require additional support for infrastructure and teacher training. Policymakers should prioritize advocating for an increase in the budget allocation for the DCP. A policy advocating for increased and consistent funding from the national government, alongside clear guidelines for local governments to allocate supplementary funds, is essential. Legislative bodies such as Congress should be engaged to ensure that ICT in education is a national priority, particularly in terms of securing financial resources that sustain the program in the long term. Stakeholders like DepEd and the National Economic and Development Authority (NEDA) should advocate for policies that ensure ICT funding is not only sufficient but also timely, so that schools are not left without resources at critical moments.

Third, another significant challenge identified was the lack of reliable technical support and internet connectivity. As a result, policies should be developed to mandate the provision of adequate technical support teams at the local and regional levels to address ICT-related issues promptly. Furthermore, infrastructure policies must be enacted to ensure that internet connectivity is a fundamental part of the ICT provision in schools. The policy should also specify clear roles for ICT personnel, particularly in terms of maintenance, repair, and troubleshooting of devices and systems. Stakeholders such as DepEd, the National Telecommunications Commission (NTC), and private internet providers should coordinate efforts to provide schools with not only the hardware but also the consistent, reliable infrastructure needed for effective ICT integration.

Fourth, it is crucial to establish a system for continuous assessment and feedback on the technology program, allowing all stakeholders to identify challenges and areas for improvement. Additionally, fostering a collaborative environment where teachers can share successful strategies for technology use can promote innovation and enhance student learning. Fourth, developing clear guidelines for technology use in the classroom will help ensure that all educators can effectively engage students while achieving educational objectives. By taking these steps, stakeholders can significantly improve the instructional value of the DepEd Computerization program, benefiting both teachers and students alike. There is a clear need for robust monitoring and evaluation (M&E) mechanisms to track the effectiveness and impact of the DCP. Policymakers should implement policies that institutionalize regular evaluations of the program's implementation at the school, division, and regional levels. These evaluations should focus not only on

resource distribution but also on the efficiency of training programs, technical support, and infrastructure use. The Department of Budget and Management (DBM) and the Commission on Audit (COA) should play crucial roles in ensuring that funds allocated for the program are used effectively. Regular feedback loops involving schools, teachers, and ICT coordinators should also be incorporated into the M&E framework to allow for real-time adjustments and improvements.

However, the success of the DepEd Computerization Program hinges on effective cross-sector collaboration. Policymakers should create frameworks for ongoing dialogue between DepEd, local government units (LGUs), private sector partners, and civil society organizations to ensure that the DCP's objectives align with broader national goals such as equitable access to education and sustainable technology integration. These policies should encourage partnerships that bring in expertise and resources from both the public and private sectors. For instance, private companies could be incentivized through public-private partnerships (PPP) to provide technology or funding for schools in exchange for tax incentives or other benefits. Additionally, LGUs should be involved in localized policymaking to ensure that the ICT needs of schools are met with consideration for local contexts, capacities, and resources.

Lastly, future researchers should explore several key areas to further understand the DepEd Computerization program in secondary schools. First, they should examine the impact of the availability of computing devices and ICT infrastructure on teachers' experiences and instructional practices. Specifically, future studies could assess how the condition of devices and the presence of adequate ICT resources influence the effectiveness of technology in the classroom. Moreover, it would be beneficial to explore the perspectives of students regarding the use of technology in their learning, as their feedback can help refine technology applications in the classroom.

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