

PRACTICES AND CHALLENGES IN MANAGING SCHOOL INFORMATION AND COMMUNICATIONS TECHNOLOGY RESOURCES

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ABSTRACT

Information and Communication Technology (ICT) is essential in enhancing teaching, learning, and school management in public secondary schools. This study examined the practices and challenges in managing ICT resources in selected public secondary schools in Batangas Province. A descriptive research design was employed, using both quantitative and qualitative approaches. Data were gathered from school ICT coordinators and teachers through a validated researcher-made questionnaire focusing on ICT planning, utilization, maintenance, and monitoring and evaluation.

Findings revealed that ICT planning and ICT maintenance were practiced moderately, indicating the presence of basic systems but gaps in strategic planning, stakeholder involvement, preventive maintenance, and technical sustainability. ICT utilization and ICT monitoring and evaluation were widely practiced, indicating strong integration of ICT into instructional delivery, administrative tasks, and routine monitoring activities. Teachers demonstrated confidence in using ICT tools; however, the use of ICT for digital assessment, Learning Management Systems, and data-driven evaluation remained limited. ICT maintenance emerged as the weakest area due to insufficient technical support, limited maintenance funding, and the absence of systematic preventive maintenance mechanisms. Key challenges identified included technical constraints, financial limitations, training gaps, planning deficiencies, and weak monitoring systems. The study proposes strategies to strengthen ICT planning, enhance instructional utilization, improve maintenance systems, and institutionalize data-driven monitoring and evaluation to ensure sustainable and effective ICT resource management in schools.

Keywords: *ICT management, school resources, educational technology, school administration*

INTRODUCTION

The integration of Information and Communications Technology (ICT) in education has become a fundamental component of 21st-century teaching and learning. With the growing demand for digital literacy and technology-driven instruction, schools are continually investing in ICT resources, including computers, internet connectivity, multimedia tools, and learning management systems. These technologies enhance instructional delivery, improve administrative efficiency, strengthen communication, and expand access to educational resources. Recognizing the critical role of technology in education, the Philippine Department of Education (DepEd) has institutionalized ICT integration through various policies and programs aimed at strengthening digital infrastructure and promoting technology-enabled learning environments, notably through the DepEd Computerization Program (DCP) as articulated in DepEd Order No. 016, s. 2023, which provides the revised guidelines on the implementation of ICT resources in public schools.

In support of quality and equitable basic education, DepEd continues to emphasize the utilization of ICT to improve teaching-learning processes and governance systems. Earlier policies such as DepEd Order No. 028, s. 2009 on the acceptance of ICT equipment and internet services, and DepEd Order No. 105, s. In 2009, the proper use of internet services in schools and offices laid the foundation for responsible and purposeful use of technology. These issuances underscore that ICT resources are not merely supplemental tools but essential components in achieving effective instruction, research-based learning, and efficient school operations.

However, the mere availability of ICT resources does not guarantee their effective utilization. The success of ICT integration largely depends on how these resources are managed within the school setting. Consistent with DepEd Order No. 016, s. 2023, effective ICT resource management entails systematic planning, proper utilization, regular maintenance, and continuous monitoring and evaluation.

These components ensure sustainability, accountability, and alignment with national education goals. Without sound ICT management practices, investments in technology may result in underutilization, frequent equipment breakdowns, and schools' inability to maximize the educational benefits of ICT.

In many public secondary schools, challenges persist in managing ICT resources due to limited financial allocation, inadequate infrastructure, insufficient technical expertise, and limited professional development opportunities for teachers. These challenges are frequently observed in the implementation of national ICT initiatives, such as the DCP, where schools struggle with ICT maintenance, monitoring, and integration into daily classroom practice. Moreover, weak monitoring and evaluation mechanisms reduce school administrators' capacity to assess program effectiveness and make evidence-based decisions on ICT improvement.

Given these concerns, it is essential to examine current practices in managing school ICT resources, particularly in the areas of planning, utilization, maintenance, and monitoring and evaluation. Analyzing these dimensions provides a comprehensive understanding of how schools implement ICT resource management in alignment with DepEd policies and identifies gaps that need to be addressed. Furthermore, examining the challenges faced by schools provides a basis for developing responsive strategies to strengthen ICT governance and support sustainable technology integration.

Thus, this study was conducted to assess the practices in managing school ICT resources in selected public secondary schools in Batangas Province. Specifically, it aimed to determine the level of ICT management practices across key dimensions, identify challenges encountered in ICT implementation, and propose strategies to enhance ICT resource management in accordance with DepEd policies and standards. The findings of this study are expected to contribute to the formulation of more effective ICT policies and school-based practices that support quality, inclusive, and future-ready education in the digital age.

Statement of the Problem

This study aimed to determine the practices in managing school ICT resources in selected public secondary schools.

Specifically, it sought to answer the following questions:

1. What is the level of practice in managing school ICT resources in terms of:
 - a. ICT planning
 - b. ICT utilization
 - c. ICT maintenance; and
 - d. ICT monitoring and evaluation?
2. What challenges are encountered by schools in managing ICT resources?
3. What program may be proposed to improve school ICT resource management?

Scope and Delimitation

The study focused on the practices related to the management of ICT resources in selected public secondary schools in Batangas Province during the School Year 2025–2026. Respondents included school ICT Coordinators and Teachers who were directly involved in ICT use and management. The study was limited to ICT planning, utilization, maintenance, and monitoring practices and did not cover learner performance outcomes or private school settings.

Review of Related Literatures

ICT Resource Management in Schools. ICT resource management in schools refers to the systematic planning, utilization, maintenance, and monitoring and evaluation of technological resources to support instructional and administrative functions. According to Bingimlas (2009), effective ICT integration requires not only the availability of technology but also strong management practices that

ensure its proper use and sustainability. Without structured management, ICT investments may not translate into improved teaching and learning outcomes.

Tondeur et al. (2017) further emphasized that ICT resource management must be aligned with school goals, curriculum standards, and institutional priorities. Strategic planning ensures that technology integration is purposeful, coordinated, and sustainable. Schools that adopt comprehensive ICT management practices are more likely to maximize the benefits of digital tools and avoid inefficient use of limited resources.

ICT Utilization. The utilization of ICT resources in education is largely influenced by teachers' competencies, attitudes, and access to appropriate technologies. Ertmer and Ottenbreit-Leftwich (2010) stressed that teachers play a central role in integrating ICT into classroom instruction, as their pedagogical beliefs and digital skills determine how technology is used for teaching and learning. Effective utilization enhances learner engagement and promotes active learning.

In addition, administrative support, continuous training, and adequate infrastructure significantly affect the extent of ICT use in schools. When teachers receive sufficient training and resources, they are more likely to meaningfully integrate ICT into instruction. This leads to improved instructional delivery, better assessment practices, and enhanced student learning outcomes.

ICT Maintenance and Sustainability. ICT maintenance is a critical component of ICT resource management, ensuring the functionality, reliability, and longevity of technological equipment. Ghavifekr et al. (2016) noted that inadequate maintenance practices often lead to frequent breakdowns, reduced efficiency, and underutilization of ICT resources, thereby negatively affecting teaching and learning processes.

Moreover, many schools face challenges such as insufficient maintenance budgets, lack of trained technical personnel, and absence of preventive maintenance systems. These limitations highlight the need for structured maintenance programs and institutional support mechanisms to ensure the sustainability and continuous functionality of ICT resources in schools.

ICT Monitoring and Evaluation. Monitoring and evaluation (M&E) are essential processes in assessing the effectiveness of ICT implementation in schools. UNESCO (2018) emphasized that ICT programs should be guided by data-driven decision-making to ensure accountability and continuous improvement. Monitoring allows schools to track ICT usage and identify operational gaps.

Evaluation, on the other hand, measures the impact of ICT on teaching practices and student learning outcomes. A well-structured M&E system enables school leaders to make informed decisions, improve resource allocation, and enhance the overall effectiveness of ICT integration. It also promotes transparency and evidence-based planning in school management.

Challenges in ICT Resource Management. Despite the increasing integration of ICT into education, schools continue to face significant challenges in effectively managing ICT resources. Bingimlas (2009) identified common barriers, including limited funding, inadequate infrastructure, insufficient training, and a lack of technical support, all of which substantially hinder the successful implementation and sustained use of ICT in schools. Financial constraints often limit schools' ability to procure updated equipment, maintain existing resources, and invest in reliable internet connectivity. As a result, ICT tools may become obsolete, nonfunctional, or insufficient to meet instructional and administrative demands, thereby reducing their potential impact on teaching and learning.

Inadequate infrastructure further compounds these challenges, particularly in schools with limited access to stable electricity, network facilities, and appropriate learning spaces for ICT use. Even when ICT equipment is available, the lack of proper infrastructure can limit its use and compromise its effectiveness. Moreover, insufficient training and professional development opportunities prevent teachers and school personnel from acquiring the digital competencies needed to meaningfully integrate ICT into instruction. Without adequate skills and confidence, teachers may rely on traditional teaching methods and underuse available technologies, creating a gap between ICT availability and classroom practice.

Additionally, resistance to change among teachers and limited administrative support pose significant obstacles to effective ICT integration. Some teachers may perceive ICT as an added burden or feel uncomfortable adopting new technologies due to fear of failure, lack of confidence, or limited time to explore digital tools. At the same time, weak leadership support and the absence of clear policies and guidelines can lead to fragmented ICT initiatives and poor resource coordination. These factors collectively undermine the sustainability of ICT programs and weaken the alignment between technology use and school goals.

Taken together, these challenges highlight the need for comprehensive and systemic strategies that address both technical and human resource concerns. Effective ICT resource management requires not only adequate infrastructure and financial support but also strong leadership, ongoing teacher capacity-building, and well-defined management policies. Addressing these interconnected challenges is essential to ensuring that ICT resources are utilized efficiently, maintained sustainably, and leveraged to improve educational outcomes in schools.

Conceptual Framework

This study is anchored in the Input–Process–Output (IPO) Model to provide a systematic framework for understanding ICT resource management in schools.

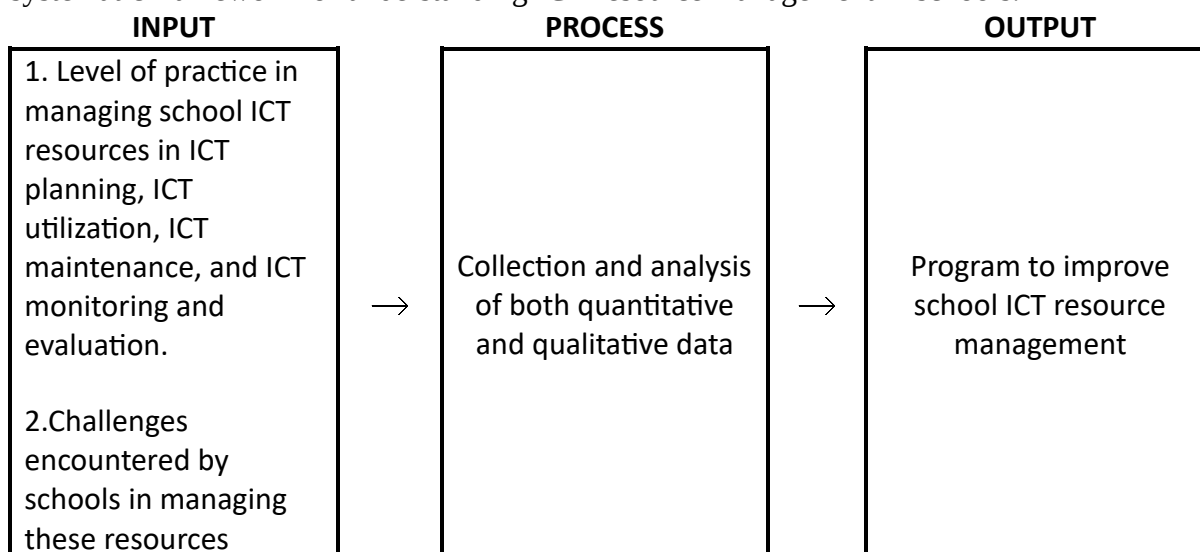


Figure 1. Conceptual Framework

The input component comprises the level of practice in managing school ICT resources, including ICT planning, ICT utilization, ICT maintenance, and ICT monitoring and evaluation. It also includes the challenges schools face in managing these resources. These inputs serve as the foundational elements that influence how ICT resources are handled within the school. The process component involves collecting and analyzing both quantitative and qualitative data to examine relationships among the identified variables. The study's output is a program aimed at improving school ICT resource management.

METHODOLOGY

Research Design

The study employed a descriptive research design, combining quantitative and qualitative approaches, to examine existing practices and challenges in managing school ICT resources in selected public secondary schools. This design was appropriate as it systematically described the current status of ICT resource management without manipulating any variables.

Research Instrument

The research instrument consisted of two parts. Part I (Quantitative) measured the level of ICT resource management practices in terms of ICT planning, ICT utilization, ICT maintenance, and ICT monitoring and evaluation using a Likert scale. Part II (Qualitative) focused on the challenges encountered by schools in managing ICT resources, gathered through open-ended questions to capture in-depth responses from participants.

Construction. A researcher-made questionnaire was developed based on related literature and studies on ICT resource management. The items were designed to measure the practices in ICT planning, utilization, maintenance, and monitoring and evaluation in selected public secondary schools.

Validation. The questionnaire was subjected to expert validation to ensure its content was relevant, clear, and appropriate. Suggestions and corrections from experts were incorporated to improve the instrument's reliability and validity.

Administration. After validation and approval, the questionnaire was administered to the respondents through both printed copies and electronic platforms, depending on accessibility and convenience. Clear instructions were provided to ensure accurate and consistent responses.

Scoring of Responses. Responses were scored on a Likert scale, with each item assigned a corresponding numerical value. The total and mean scores were computed to determine the level of ICT resource management practices across the identified indicators.

Range	Verbal Interpretation
3.26 – 4.00	Highly Practiced
2.51 – 3.25	Moderately Practiced
1.76 – 2.50	Slightly Practiced
1.00 – 1.75	Least Practiced

Data Gathering Procedures

A validated researcher-made questionnaire, reviewed by experts for content validity, served as the primary data-gathering instrument. Upon securing permission from the school authorities, the questionnaires were distributed to the respondents both personally and electronically. After retrieval, all responses were checked, tallied, coded, and analyzed using appropriate statistical tools to interpret the data accurately.

Study Limitations and Ethical Considerations

The study was limited to self-reported data from respondents, which may be influenced by personal perceptions and bias. Despite this limitation, ethical standards were strictly observed throughout the study. These included obtaining informed consent from participants, ensuring confidentiality of responses, and guaranteeing voluntary participation without coercion.

RESULTS AND DISCUSSION

1. Level of ICT Resource Management Practices

Tables 1-4 show the Level of ICT Resource Management Practices.

1.1 Level of ICT Planning Practices

Table 1 presents the level of ICT planning practices in selected public secondary schools across 10 indicators.

Table 1. Level of ICT Planning Practices

	Mean	Verbal Interpretation
1. ICT plan is aligned with the School Improvement Plan (SIP)	3.30	Highly Practiced

2. ICT needs are identified before the procurement of resources	3.20	Moderately Practiced
3. Teachers are consulted in ICT planning activities	3.15	Moderately Practiced
4. ICT resources are allocated based on instructional priorities	3.35	Highly Practiced
5. The school conducts regular ICT planning sessions	3.10	Moderately Practiced
6. ICT development goals are clearly defined in school planning	3.25	Moderately Practiced
7. Budget allocation for ICT is included in annual planning	3.40	Highly Practiced
8. ICT plans consider future technology upgrades	3.30	Highly Practiced
9. Stakeholders participate in ICT planning processes	3.10	Moderately Practiced
10. ICT planning is documented and updated regularly	3.25	Moderately Practiced
	3.25	Moderately Practiced

The composite mean of 3.25, interpreted as Moderately Practiced, indicates that ICT planning is implemented to a reasonable extent but is not yet fully institutionalized or consistently applied across all planning dimensions.

Among the indicators, the highest mean was obtained for budget allocation for ICT included in annual planning, suggesting that financial planning for ICT is relatively more integrated than for other planning components. This indicates that schools recognize the importance of allocating funds for ICT during their annual budgeting process. However, according to Tondeur et al. (2017), effective ICT integration requires not only budget allocation but also a comprehensive, strategic ICT development plan that aligns with curriculum goals and long-term institutional priorities. Thus, while funding considerations are present, they may not yet be fully guided by a structured ICT planning framework.

On the other hand, the conduct of regular ICT planning sessions and stakeholder participation in ICT planning obtained the lowest mean scores. This suggests limited collaboration and irregular planning activities, which may negatively affect the effectiveness, relevance, and sustainability of ICT initiatives. Bingimlas (2009) emphasized that successful ICT integration requires collaborative planning involving teachers, administrators, and stakeholders to ensure shared ownership and effective implementation. The findings imply that ICT planning in the schools remains largely administrative in nature, with minimal participatory engagement, which may limit innovation and long-term sustainability of ICT programs.

1.2 ICT Utilization Practices

Table 2 shows that ICT utilization obtained a composite mean of 3.60, interpreted as Highly Practiced, indicating that ICT resources are effectively used in instructional and administrative processes in public secondary schools.

Table 2. Level of ICT Utilization Practices

	Mean	Verbal Interpretation
1. Teachers regularly use ICT in classroom instruction	3.70	Highly Practiced
2. ICT resources are integrated into lesson delivery	3.65	Highly Practiced
3. Multimedia tools are used to enhance teaching and learning	3.60	Highly Practiced

4. Students are allowed to use ICT resources for learning activities	3.55	Highly Practiced
5. Learning Management Systems (LMS) are utilized when available	3.45	Moderately Practiced
6. ICT is used for collaborative learning activities	3.50	Highly Practiced
7. ICT is used for assessment and evaluation	3.40	Moderately Practiced
8. ICT resources support curriculum delivery effectively	3.60	Highly Practiced
9. School administrative tasks are supported by ICT tools	3.55	Highly Practiced
10. Teachers demonstrate confidence in using ICT equipment	3.65	Highly Practiced
	3.60	Highly Practiced

The highest-rated indicator was teachers' regular use of ICT in classroom instruction, reflecting a strong level of ICT integration in teaching and learning. This finding suggests that ICT has become a routine part of instructional delivery in many classrooms. Similarly, high mean scores were observed for teachers' confidence in using ICT equipment and in integrating ICT into lesson delivery, indicating that teachers are generally competent and comfortable in using technology for instructional purposes. This aligns with Ertmer and Ottenbreit-Leftwich (2010), who emphasized that teacher confidence and technological proficiency are key drivers of effective ICT integration in education.

However, lower mean scores were noted in the use of ICT for assessment and evaluation and in the use of Learning Management Systems, both of which were interpreted as moderately practiced. This indicates that while ICT is widely utilized for instructional delivery, its application in assessment processes and structured digital learning environments remains limited. According to UNESCO (2018), effective ICT integration should extend beyond classroom instruction to include assessment, feedback, and learning management systems to fully support 21st-century learning. The results suggest a gap between basic ICT use and more advanced pedagogical applications, highlighting the need for further training and system support for digital assessment and LMS use.

1.3 ICT Maintenance Practices

Table 3 reveals that ICT maintenance obtained the lowest composite mean of 2.95, interpreted as Moderately Practiced, indicating that maintenance systems are relatively weak compared to other ICT management areas.

Table 3. Level of ICT Maintenance Practices

	Mean	Verbal Interpretation
1. ICT equipment is regularly checked for functionality	3.00	Moderately Practiced
2. The school has a system for reporting ICT defects	2.90	Moderately Practiced
3. ICT devices are repaired promptly when damaged	2.85	Moderately Practiced
4. Preventive maintenance is conducted regularly	2.80	Moderately Practiced
5. There is a designated person responsible for ICT maintenance	3.10	Moderately Practiced
6. ICT equipment is properly stored and secured	3.05	Moderately Practiced
7. Maintenance records of ICT equipment are kept	2.90	Moderately Practiced

8. Replacement of faulty parts is done when necessary	2.95	Moderately Practiced
9. Internet and network systems are regularly maintained	2.85	Moderately Practiced
10. The school allocates funds for ICT maintenance	2.95	Moderately Practiced
	2.95	Moderately Practiced

The highest-rated indicator in this domain was the designation of ICT maintenance personnel, suggesting that some schools have already assigned individuals to address ICT-related concerns. This reflects an initial step toward institutionalizing ICT support systems, which is essential for ensuring technical continuity in schools. However, according to Ghavifekr et al. (2016), the mere presence of assigned personnel is insufficient without structured systems, adequate training, and clear maintenance protocols to ensure effective ICT sustainability.

On the other hand, the lowest mean was recorded in preventive maintenance practices, followed by internet and network maintenance, and prompt repair of ICT devices. These findings indicate significant challenges in sustaining ICT functionality, particularly in implementing proactive maintenance strategies and ensuring timely technical interventions. Bingimlas (2009) emphasized that inadequate maintenance systems often lead to frequent equipment breakdowns and reduced instructional efficiency, ultimately affecting the quality of technology integration in education.

Other indicators, such as maintenance reporting systems, documentation practices, and budget allocation, also received only moderate ratings. This suggests that while some maintenance activities are present, they are not fully systematized or adequately supported financially. UNESCO (2018) highlighted that sustainable ICT infrastructure requires not only technical capacity but also consistent funding, documentation systems, and institutionalized maintenance procedures. The results therefore emphasize the need for a more structured, preventive, and well-funded ICT maintenance framework to ensure long-term functionality and efficiency of school ICT resources.

1.4 ICT Monitoring and Evaluation Practices

Table 4 presents the level of ICT monitoring and evaluation practices, with a composite mean of 3.30, interpreted as Moderately Practiced. This suggests that monitoring systems exist in schools but are not yet fully standardized or data-driven.

Table 4. Level of ICT Monitoring and Evaluation Practices

	Mean	Verbal Interpretation
1. The school monitors the use of ICT resources regularly	3.25	Moderately Practiced
2. ICT utilization is documented and recorded	3.20	Moderately Practiced
3. There are performance indicators for ICT implementation	3.15	Moderately Practiced
4. ICT activities are evaluated periodically	3.30	Highly Practiced
5. Feedback is collected from teachers regarding ICT use	3.35	Highly Practiced
6. ICT reports are submitted to school administrators	3.30	Highly Practiced
7. Data from ICT usage is used for decision-making	3.25	Moderately Practiced
8. The school conducts evaluation of ICT programs	3.30	Highly Practiced

9. ICT monitoring results are used for improvement planning	3.35	Highly Practiced
10. There is a system for tracking ICT resource effectiveness	3.20	Moderately Practiced
	3.30	Highly Practiced

The highest-rated indicators were feedback collection from teachers and the use of monitoring results for improvement planning. This suggests that schools place strong value on feedback mechanisms and are aware of the importance of using evaluation data to inform planning and decision-making. This aligns with UNESCO (2018), which emphasizes that feedback-driven monitoring systems are essential for evidence-based school improvement. However, while these practices are present, their full integration into a systematic, sustained decision-making process may remain limited.

Indicators such as ICT activities evaluation, report submission, and program evaluation also reflect a moderate level of implementation. This implies that monitoring activities are regularly conducted in schools; however, according to Tondeur et al. (2017), effective ICT evaluation requires not only compliance-based reporting but also consistent and structured assessment frameworks that guide instructional and administrative improvements. The moderate ratings suggest that while monitoring exists, it may lack depth, standardization, and long-term impact.

Lower mean scores were observed across performance indicators for ICT implementation and ICT effectiveness tracking systems, indicating weaknesses in the standardization of monitoring tools and limited use of structured evaluation frameworks. Bingimlas (2009) noted that insufficient monitoring systems often result in fragmented ICT implementation and difficulty in assessing actual educational impact. These findings suggest that schools may benefit from more systematic and data-driven monitoring tools to ensure accurate tracking of ICT performance and effectiveness.

2. Challenges in Managing ICT Resources

Table 5 presents the challenges encountered in managing ICT resources, categorized into five major themes. Technical constraints emerged as a primary concern, particularly the lack of ICT personnel and limited technical expertise, which hinder timely maintenance and troubleshooting. Financial limitations were also evident, as schools reported insufficient budgets and inadequate allocation of resources for ICT needs.

Table 5. Challenges in Managing ICT Resources

Major Theme	Sub-Themes	Exemplars
Technical Constraints	Lack of ICT personnel	<i>"We do not have a designated technician, so repairs take a long time." – R1</i>
	Limited technical expertise	<i>"Sometimes we try to fix issues ourselves, but we are not trained for technical troubleshooting." – R3</i>
Financial Limitations	Insufficient maintenance budget	<i>"There is no specific budget for ICT repair, so broken units remain unused." – R2</i>
	Inadequate resource allocation	<i>"ICT is not always prioritized in budgeting compared to other school needs." – R4</i>
Capacity and Training Issues	Limited teacher training	<i>"We only had one ICT training, and it was not enough for actual classroom use." – R3</i>

	Low digital competence	<i>"Some teachers are still not confident in using computers during lessons." – R6</i>
Planning and Management Gaps	Inadequate ICT planning	<i>"There is no clear long-term plan for upgrading our ICT facilities." – R5</i>
	Weak policy implementation	<i>"Policies exist, but they are not strictly followed or monitored." – R2</i>
Monitoring and Evaluation Issues	Weak monitoring system	<i>"There is no regular checking of how ICT resources are being used." – R1</i>
	Limited data-driven decision-making	<i>"We do not have records to base decisions on improving ICT programs." – R2</i>

Capacity and training issues underscore the critical need for continuous professional development, as many teachers still lack the necessary ICT competencies, confidence, and skills in pedagogical integration. According to Ertmer and Ottenbreit-Leftwich (2010), teacher beliefs and technological proficiency are key determinants of successful ICT integration in instruction. Similarly, UNESCO (2018) emphasized that sustained ICT capacity building is essential to empower educators to use digital tools effectively and meaningfully in teaching and learning processes. Without adequate training and support, ICT resources remain underutilized and fail to achieve their intended educational impact.

Planning and management gaps further indicate the absence of comprehensive ICT development plans and inconsistent implementation of ICT-related policies. Tondeur et al. (2017) stressed that effective ICT integration requires strategic alignment between ICT initiatives and school development goals, supported by clear policies and long-term planning. In many educational settings, weak governance structures and lack of coordinated planning result in fragmented ICT implementation and inefficient resource allocation. These gaps limit the sustainability and scalability of ICT programs in schools.

Monitoring and evaluation issues reveal weaknesses in tracking ICT utilization and in using data for evidence-based decision-making. UNESCO (2018) highlighted that robust monitoring and evaluation systems are essential for assessing the effectiveness, efficiency, and impact of ICT investments in education. However, in many schools, the absence of standardized indicators and systematic data collection mechanisms leads to poor accountability and limited feedback for improvement. As a result, decision-making becomes reactive rather than data-driven.

These themes suggest that challenges in ICT resource management are multidimensional and interconnected, requiring a holistic and coordinated response. Bingimlas (2009) emphasized that successful ICT integration depends on the synergy of technical support, adequate funding, teacher training, and strong institutional leadership. Therefore, addressing ICT management challenges necessitates a comprehensive approach that combines capacity building, strategic planning, financial investment, and strengthened governance systems to ensure sustainable and effective ICT integration in schools.

3. Formulated a program to improve the ICT Resource Management

The findings of the study revealed that although Information and Communication Technology (ICT) utilization in teaching and learning is widespread, public secondary schools continue to face significant challenges in ICT planning, maintenance, monitoring, and evaluation. Weak maintenance systems, limited technical support, inadequate capacity-building opportunities, insufficient allocation

of the ICT budget, and the absence of data-driven monitoring mechanisms hinder the optimal and sustainable use of ICT resources.

In response to these challenges, the ACTIVATE Program (Accelerated Coordination, Training, Innovation, Validity, and Accountability in Technology-Enhanced ICT Resource Management) is proposed as a school-based initiative that adopts a systematic and sustainable approach to ICT resource management. The program aims to institutionalize effective ICT planning, strengthen maintenance and technical support systems, enhance teachers' and school personnel's ICT competencies, and establish a structured monitoring and evaluation framework. Through this initiative, schools are expected to ensure the efficient, accountable, and long-term use of ICT resources to support teaching, learning, and school management.

The ACTIVATE Program is designed around the following key features:

1. Strengthening school-level ICT planning and governance to ensure alignment with school goals and Department of Education (DepEd) policies.
2. Enhancing teachers' digital competence and promoting the meaningful integration of ICT in instruction, assessment, and school administration.
3. Addressing weaknesses in ICT maintenance systems by institutionalizing structured preventive and corrective maintenance mechanisms.
4. Strengthening ICT monitoring and evaluation through the development of standardized indicators and tools for tracking ICT utilization and effectiveness.
5. Promoting the long-term sustainability of ICT resources through shared responsibility and active stakeholder engagement.

CONCLUSIONS

Based on the study's findings, it is concluded that the management of ICT resources in selected public secondary schools is generally established but varies in the level of implementation across key management domains. ICT planning and ICT maintenance are moderately practiced, indicating that while foundational systems and procedures are in place, these areas are not yet fully institutionalized or consistently implemented. In particular, gaps remain in stakeholder participation, long-term planning, preventive maintenance, and the sustainability of ICT resources.

ICT utilization and ICT monitoring and evaluation are well-practiced, reflecting strong integration of ICT into instructional delivery, administrative tasks, and basic monitoring activities. Teachers regularly use ICT tools in classroom instruction and demonstrate confidence in their use, highlighting the growing role of technology in teaching and learning processes. Similarly, schools actively monitor ICT usage and collect feedback; however, these practices remain largely compliance-oriented and lack standardized performance indicators and advanced data-driven evaluation mechanisms.

Despite the high level of ICT utilization, the study indicates that the use of ICT for assessment, Learning Management Systems, and advanced pedagogical applications requires further enhancement. Moreover, weaknesses in maintenance systems and technical support continue to affect the functionality and longevity of ICT resources, limiting their full educational potential.

Therefore, the findings suggest that while schools have made significant progress in integrating ICT into educational practices, the absence of comprehensive planning frameworks, structured maintenance systems, and robust monitoring and evaluation tools constrains the sustainability and effectiveness of ICT resource management. Strengthening institutional planning, technical support, and data-driven governance is therefore essential to fully optimize ICT investments and ensure their long-term impact on teaching, learning, and school management.

RECOMMENDATIONS

- 1 ICT Coordinators should strengthen the implementation of a structured ICT development, maintenance, and monitoring system by adopting and operationalizing the formulated Program.
- 2 School Heads should institutionalize comprehensive ICT planning, continuous teacher capacity-building, and adequate allocation of resources to maximize the integration and sustainability of ICT in teaching, learning, and school management. They are also encouraged to review, support, and implement the formulated Program as a school-based initiative to strengthen governance, accountability, and long-term ICT resource sustainability.
- 3 Future researchers are encouraged to further investigate ICT resource management in a wider context or explore intervention-based studies to validate and enhance the effectiveness of the proposed strategies.

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