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ICT Skills and Technology Integration among the Teachers of Luna National High School: A Basis for Intervention

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Abstract

This study examined the ICT skills and technology integration practices of teachers at Luna National High School using a quantitative descriptive survey of 29 teaching personnel. Findings showed that teachers had advanced proficiency in basic ICT tasks but only intermediate competence in more technical skills. Laptops, display technologies, and presentation tools were the most used, with 79% of teachers using digital tools almost daily. Key challenges included limited internet access, inadequate facilities, and lack of time and training. To address these, teachers recommended tiered training, skills assessments, improved access to updated devices, and stronger support through collaboration with the LGU and DICT. The study highlights the need for a structured, collaborative interventionto enhance ICT integration in teaching.

Keywords: ICT Skills, Technology Integration, Teacher Training, Digital Tools, Digital Platforms

I. Introduction

Integrating Information and Communication Technology (ICT) into education is a global priority, offering powerful tools to enhance teaching and learning. However, effective implementation varies widely. In countries like Nepal and parts of Africa, infrastructure gaps, high costs, and limited training often restrict ICT use to basic tasks. These cases show that access alone isn't enough, teachers also need skills, support, and confidence to use technology effectively.

In the Philippines, the Department of Education has launched initiatives like the DepEd Computerization Program and Digital Rise to improve digital literacy and provide devices and training. Despite these efforts, challenges remain, especially in remote areas where access to infrastructure, updated equipment, and technical support is limited. A study in Apayao found that while teachers possessed basic ICT skills, they lacked the tools and support to apply them effectively—an issue also observed at Luna National High School. Here, teachers are motivated but face barriers such as outdated hardware, limited training, and poor connectivity.

Although ICT in education has been widely studied, there is limited research focused on how it is used in specific rural schools. This study aims to fill that gap by assessing the ICT skills of teachers at Luna National High School, the digital tools they use, and the challenges they face. The goal is to recommend practical interventions that support more effective and meaningful technology integration.

II. Objectives of the Study

- ✓ To determine the level of ICT skills among the teachers at Luna National High School.
- ✓ To identify the types of digital tools and platforms used by teachers in their instruction.
- ✓ To assessthe frequency of use of these digital tools and platforms in teaching.
- ✓ To explore the challenges teachers' face in acquiring the ICT skills necessary for effective technology integration in instruction.
- ✓ To propose an intervention to improve the ICT skills among the teachers at Luna National High School.

III.Methodology

This study employed a quantitative descriptive survey method to assess the ICT skills and technology integration practices of teaching personnel at Luna National High School. The research was conducted within the two campuses of LNHS, located in Poblacion and Turod, Luna, Apayao, during the school year 2024–2025. The respondents were 29 out of 31 total teaching staff members. Data was gathered using a modified survey questionnaire, originally developed by Travis Cote and Brett Milliner.

Tools of Analysis

- ➢ Descriptive Statistics for data analysis (mean, frequency, percentage), and
- ➢ Four-Point Likert Scale to measure ICT skill levels.

IV.Review of Literature

Limpangog and Calibainvestigated ICT skills among teachers and found that educators generally possess strong proficiency in basic ICT tasks such as word processing and internet searching but show intermediate competence in specialized skills like web page creation and database management. Their study emphasized the need for continuous professional development to bridge these skill gaps and improve technology integration in instruction. Similarly, **Too BC et. al**found a significant positive correlation between teachers' ICT competency and the successful implementation of the competency-based curriculum, emphasizing that both basic and advanced ICT skills are crucial for effective integration of technology in teaching practices. It also highlighted gaps in teachers' ICT training and proficiency, underscoring the need for comprehensive professional development to enhance ICT integration in classrooms. Research by **Kikas et al**. revealed that teachers mainly use laptops, projectors, and presentation software like PowerPoint and Google Slides to enhance visual learning, while adoption of learning management systems and assessment platforms remains limited due to infrastructural constraints and varying digital literacy levels. The study found that frequent use of basic digital tools supports better instructional outcomes and increases teacher confidence, but challenges such as infrastructure and digital competence hinder broader technology integration. Barriers to ICT integration identified across multiple studies include limited access to updated hardware, unreliable internet connectivity, lack of time for training, and insufficient technical support. Personal factors such as low confidence and fear of technology also affect integration but are less significant than systemic challenges. Effective interventions include tiered professional development, peer mentoring, hands-on workshops, and improved access to digital resources. Studies emphasize that tailored, sustained support and strong school leadership are critical for fostering a culture of technology use in education.

V. Results and Discussion

Table 1: Teachers' self-assessed ICT Skills

ICT skills	Mean	Description	Interpretation
1. Turn on and shutdown a computer	4	Excellent	Advanced
2. Start and exit a computer program?	4	Excellent	Advanced
3. Print a document using a printer	4	Excellent	Advanced
4. Create a basic Microsoft Word document	3.79	Excellent	Advanced
5. Send and receive attachments through email messages	3.58	Excellent	Advanced
6. Search for information using a web search engine	3.96	Excellent	Advanced
7. Move a file from a hard drive to a USB drive	3.82	Excellent	Advanced
8. Download and save files from the web	3.86	Excellent	Advanced
9. Change the font style and size in a document	4	Excellent	Advanced
10. Change screen brightness and contrast	4	Excellent	Advanced
11. Minimize, maximize and move windows on the desktop	4	Excellent	Advanced
12. Perform file management including deleting, restoring and renaming files, etc.	3.65	Excellent	Advanced
13. Copy, cut and paste inside a document	4	Excellent	Advanced
14. Create a simple presentation using PowerPoint	3.79	Excellent	Advanced
15. Install a software program	3.96	Excellent	Advanced
16. Write files onto a CD	2.89	Good	Intermediate
17. Resize a photograph	3.82	Excellent	Advanced
18. Create a basic Excel spreadsheet	3.89	Excellent	Advanced
19. Scan a disk or file for virus	3.44	Excellent	Advanced
20. Use a video conferencing tool on the web	3.72	Excellent	Advanced
21. Record and edit sounds	3.75	Excellent	Advanced
22. Create a simple database using Access or Excel	3.62	Excellent	Advanced
23. Create a simple web page	2.62	Good	Intermediate
24. Insert a hyperlink into a presentation slide	3.37	Excellent	Advanced
25. Use keyboard shortcuts to help with typing tasks	3.34	Excellent	Advanced
Overall Mean	**3.71**	**Excellent**	**Advanced**

Table 1 indicates that teachers at Luna National High School exhibit a high level of confidence and independence in performing fundamental ICT tasks, with mean scores generally falling between 3.34 and 4.00—reflecting strong mastery of basic and instructional skills. In contrast, more technical and specialized ICT tasks were rated lower, though still within the "Good" range, suggesting an intermediate level of competence. This highlights a gap between proficiency in basic ICT functions and more advanced technology applications, indicating a need for targeted support in developing specialized ICT skills.

Figure 1: Types of digital tools used in instruction

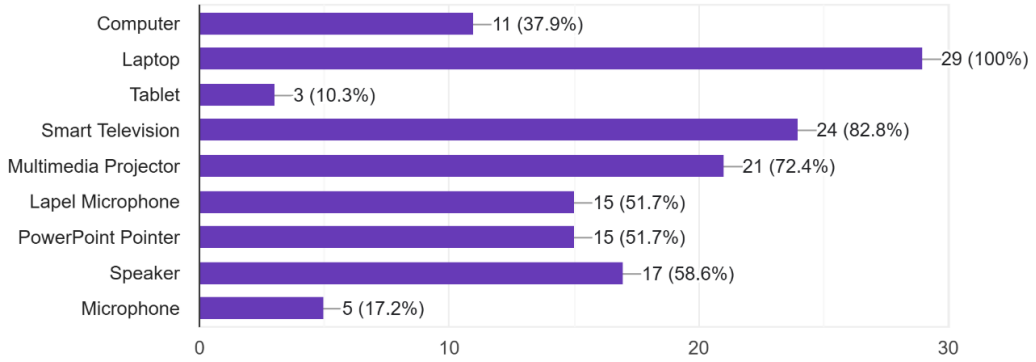

Figure 1 shows that laptops are the most used device in teaching, followed by display technologies such as smart TVs and projectors. Some teachers also utilize supportive tools like speakers, lapel microphones, and PowerPoint pointers to enhance clarity and mobility during instruction. In contrast, desktop computers are used less frequently, likely due to limitations in mobility and accessibility, while microphones and tablets are the least utilized. These findings suggest a strong preference for portable devices that enhance visual and multimedia content delivery in the classroom.

Figure 2: Digital platforms incorporated in teaching

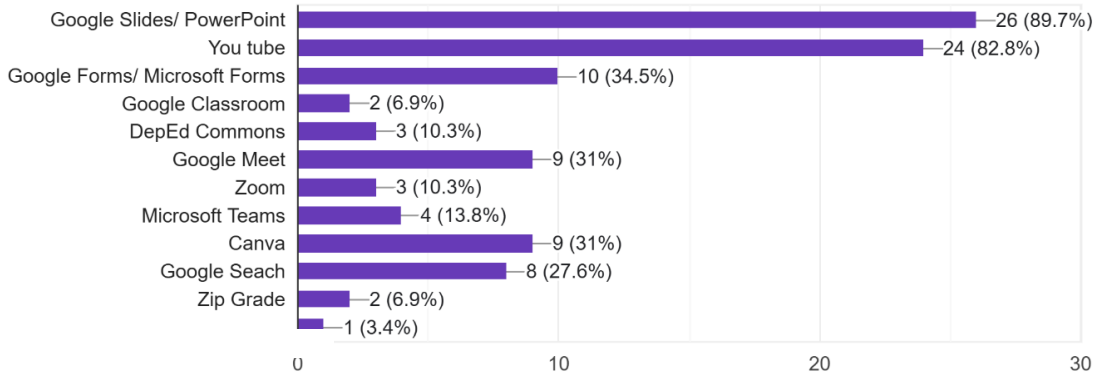

Figure 2 indicates that teachers primarily integrate presentation software (Google Slides/PowerPoint) and video resources (YouTube) into their instruction, highlighting a strong focus on content delivery and visual learning. In contrast, platforms such as learning management systems, communication tools, content creation tools, and assessment applications are used less frequently. This suggests that tools requiring higher digital proficiency, more stable internet access, or structured digital management are less commonly adopted in classroom practice.

Figure 3: Frequency of digital tool usage in classroom instruction

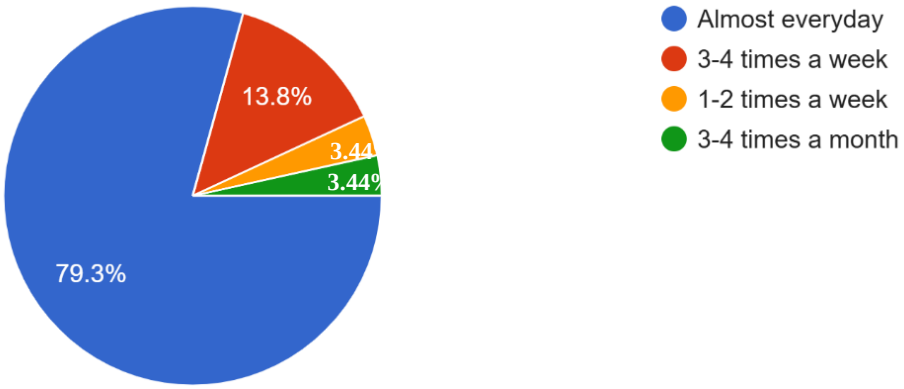

Figure 3 indicates that all the respondents are using digital tools in their teaching. Majority of them (23 teachers, 79.3%) use digital tools almost daily. A smaller group (4 teachers, 13.8%), use technology 3–4 times a week, while the rest utilize it less frequently, with only minimal usage seen at 1–2 times a week. This consistent use of digital tools indicates that teachers not only value the role of technology in enhancing instruction but also have adequate access and competence to incorporate it regularly into their teaching practices.

Figure 4: Challenges teachers encountered in acquiring ICT skills

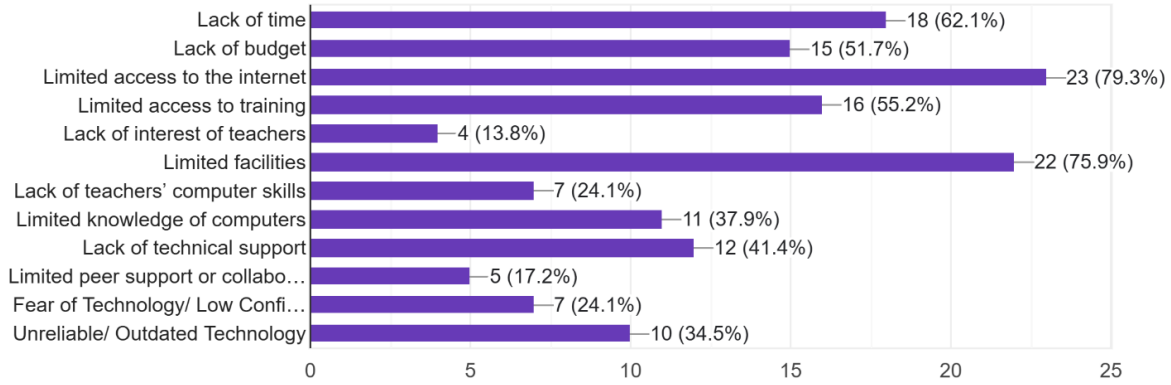

Figure 4shows that the most common challenges teachers at Luna National High School face in acquiring ICT skills are limited internet access, inadequate facilities, and lack of time, indicating that infrastructure and workload-related issues significantly impede their ability to enhance their skills. Other notable obstacles include limited training opportunities, insufficient budget, and lack of technical support, which point to shortcomings in institutional and financial backing. Additionally, unreliable or outdated technology and limited computer knowledge among some teachers highlight the need for equipment upgrades and targeted skill-building initiatives. While personal barriers such as low confidence, fear of technology, lack of peer support, and low interest were reported, they were considered less significant compared to the more pressing external and systemic issues.

Figure 5: Interventions to improve ICT skills

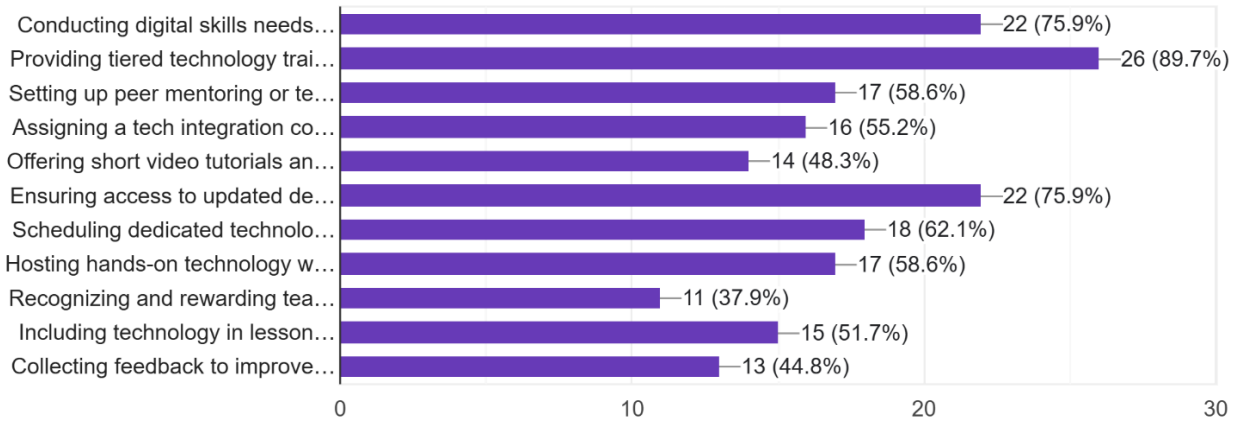

Figure 5 shows that the most strongly recommended intervention to improve ICT skills among teachers at Luna National High School is tiered technology training—from basic to advanced—endorsed by 26 teachers. This reflects a clear demand for structured, progressive training tailored to varying skill levels. Additionally, 22 teachers supported conducting ICT skills needs assessments and ensuring access to updated devices and reliable internet, emphasizing the importance of identifying specific training gaps and providing the necessary tools and connectivity. Other widely supported interventions include allocating dedicated time for technology exploration, peer mentoring, and hands-on workshops, indicating a strong preference for practical, collaborative learning. While strategies like assigning tech coaches, using video tutorials, and recognizing tech-integrated teaching were less frequently chosen, they remain valuable complementary approaches for sustaining long-term ICT development and motivation among educators.

VI. Conclusion

The study revealed that teachers at Luna National High School possess strong foundational ICT skills, though their proficiency in specialized tasks remains at an intermediate level. Laptops and display technologies, along with presentation and video platforms, are the most frequently used tools in instruction, with most teachers integrating them into their teaching on a near-daily basis. Despite this, challenges such as poor internet connectivity, outdated equipment, lack of training, limited time, and inadequate facilities continue to hinder the advancement of ICT competencies. To address these gaps, a structured intervention that includes tiered training programs, regular needs assessments, and improved access to digital resources is crucial for enhancing technology integration in instruction.

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