

ICT-LEAP: ICT-LED ENHANCEMENT AND ADVANCEMENT PROGRAM FOR TLE TEACHERS OF AGUSAN NATIONAL HIGH SCHOOL

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Abstract: This study evaluated the effectiveness of the ICT-LEAP (ICT-Led Enhancement and Advancement Program) intervention designed to improve the ICT competencies of Technology and Livelihood Education (TLE) teachers at Agusan National High School. Anchored on curriculum alignment and innovation goals, the program began with a training needs assessment, focus group discussions, and identification of ICT skills gaps, which revealed limited experience in digital content creation and productivity tools among respondents. Using a quantitative descriptive-evaluative research design, the study involved ten TLE teachers who underwent structured ICT-LEAP training modules. Data were collected through pre-test and post-test evaluation and training surveys. Statistical analysis was employed to assess competency development. Findings revealed a significant improvement in ICT competency levels after the intervention. Mean scores increased by 28.3 with high statistical significance ($p < 0.001$), and a very large effect size (Cohen's $d = 4.78$) was recorded. Respondents progressed from intermediate to advanced competency levels. Additionally, teacher satisfaction was exceptionally high, with 100% completion and a 5/5 satisfaction rating. Qualitative feedback highlighted increased confidence in using digital tools such as Canva and improved instructional readiness. The results demonstrate that targeted, needs-based ICT training programs effectively enhance teacher competencies, instructional preparedness, and technology integration in TLE education. The study recommends program expansion, institutional partnerships, continued module development, and ICT-related initiatives to sustain impact and promote innovation in teaching practices.

Keywords: ICT competency, instructional readiness, professional development, teacher training, TLE teachers, technology integration.

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1. Introduction and Rationale

The rapid advancement of digital technologies has significantly transformed the landscape of education, necessitating the integration of Information and Communication Technology (ICT) in teaching and learning processes. In the Philippine context, the Department of Education (DepEd) has emphasized digital transformation through initiatives such as the MATATAG Curriculum, which underscores the importance of equipping teachers with essential ICT competencies to deliver relevant and future-ready instruction (Department of Education, 2023). This shift is further reinforced by global frameworks such as the UNESCO ICT Competency Framework for Teachers, which highlights that teachers must not only possess basic digital skills but also demonstrate the ability to integrate technology pedagogically to enhance student learning outcomes (UNESCO, 2018). Within this context, PROJECT ICT-LEAP: ICT-Led Enhancement and Advancement Program for TLE Teachers of Agusan National High School was conceptualized as an extension initiative aimed at addressing the growing demand for digitally competent educators in Technology and Livelihood Education (TLE).

The development of the program was grounded in a systematic assessment of the local educational context of Agusan National High School. A training needs assessment and focus group discussions revealed persistent gaps in teachers' ICT competencies, particularly in areas such as digital content creation, integration of multimedia tools, and effective use of productivity applications in instruction. These findings are consistent with studies indicating that while access to technology has improved, teachers' readiness to integrate ICT meaningfully into pedagogy remains uneven (Ertmer & Ottenbreit-Leftwich, 2010). Moreover, the World Bank has reported that digital skills gaps among educators in developing contexts hinder the effective implementation of technology-driven education reforms (World Bank, 2020). Thus, the identified problem is not merely access to technology but the lack of sustained, context-specific professional development that builds both confidence and competence among teachers. This gap highlights the urgent need for context-specific extension programs that not only provide access to technology but also develop teachers' pedagogical capacity to integrate ICT effectively in instruction.

In response to these challenges, ICT-LEAP was designed as a capacity-building extension program that provides targeted and structured capacity-building interventions to enhance ICT competencies among TLE teachers. The program integrates training workshops, hands-on learning sessions, and collaborative engagements that promote practical application of digital tools in instructional design. Its purpose is not only to improve teachers' technical

knowledge but also to develop their ability to create engaging, learner-centered, and technology-enhanced learning environments. This aligns with the institutional mandate of higher education institutions and partner organizations to extend knowledge and expertise to communities, particularly in strengthening the quality of education through innovation. Furthermore, the initiative supports regional and national development priorities by contributing to digital literacy advancement and workforce readiness, which are critical components of the Philippines' educational and economic agenda (Republic Act No. 10533, 2013).

To operationalize these objectives at the institutional level, the City College of Cagayan de Oro (CCCDO), through its extension arm, implemented the ICT-LEAP program as part of its commitment to community-responsive extension services. The initiative was carried out in collaboration with the Department of Education (DepEd) Schools Division, ensuring alignment with curriculum standards and school-based needs. Through this partnership, the program facilitated targeted and structured capacity-building interventions focusing on digital content creation, productivity tools, and ICT integration in TLE instruction, thereby ensuring that interventions are grounded in actual classroom practice and responsive to teachers' contextual realities.

A distinguishing feature of ICT-LEAP is its emphasis on institutional co-creation, which moves beyond the traditional one-directional model of extension delivery. Instead of merely providing training, the program was developed through a participatory process involving educators, school administrators, and academic experts. This collaborative approach allowed for the identification of context-specific ICT challenges and the co-design of training modules that directly respond to teachers' needs. Such an approach is supported by UNESCO, which emphasizes that effective teacher professional development must be context-driven, collaborative, and sustained to produce meaningful impact (UNESCO, 2018). Through joint planning, shared expertise, and continuous feedback mechanisms, ICT-LEAP demonstrates how co-creation enhances both the relevance and effectiveness of extension initiatives.

Moreover, the integration of multi-stakeholder collaboration in ICT-LEAP reflects a broader framework of academe-school partnership that contributes to sustainable educational development. The pooling of institutional resources, pedagogical expertise, and technological support enables the delivery of a more comprehensive and responsive training program. This aligns with findings from the World Bank, which highlight that collaborative partnerships are critical in addressing systemic challenges in teacher capacity-building, particularly in digital education (World Bank, 2020). By leveraging these partnerships, ICT-

LEAP not only enhances teacher competencies but also fosters a culture of continuous professional growth and innovation within the school community.

Anchored on the conference theme “From Knowledge to Impact,” the ICT-LEAP project exemplifies how research-based extension initiatives can translate identified needs into measurable outcomes. By addressing the gap between theoretical knowledge of ICT and its practical application in classrooms, the program demonstrates a pathway from capacity-building to tangible improvements in teaching practice. The evaluation of teachers’ ICT competency before and after the intervention further ensures that the initiative generates evidence of impact, thereby contributing to the broader discourse on effective extension programs in education. Ultimately, ICT-LEAP embodies the principle that meaningful educational transformation occurs when knowledge is actively applied to address real-world challenges, resulting in sustainable and impactful change within the teaching community.

2. Framework and Related Practices

This chapter presents the conceptual, theoretical, and practice-based foundations that guided the design and implementation of PROJECT ICT-LEAP: ICT-Led Enhancement and Advancement Program for TLE Teachers of Agusan National High School. It integrates relevant frameworks, policies, and best practices in ICT integration and extension work, providing a strong basis for the program’s structure and delivery.

2.1 Conceptual Framework of ICT Integration in Education

The ICT-LEAP program is anchored on the premise that effective integration of Information and Communication Technology (ICT) enhances both teaching practices and student learning outcomes. The use of ICT in education is not limited to access to digital tools but extends to the meaningful integration of these tools into pedagogy. According to UNESCO, ICT integration involves the ability of teachers to design, implement, and evaluate technology-supported learning environments that promote higher-order thinking skills and active learning (UNESCO, 2018). This conceptualization emphasizes that teachers must transition from basic digital literacy to pedagogical application, aligning technology use with instructional goals.

Furthermore, the framework recognizes that ICT integration is influenced by contextual factors such as teacher readiness, institutional support, and access to resources. The program, therefore, situates ICT use within the realities of TLE instruction, ensuring that digital tools are utilized to support hands-on, skills-based learning. By aligning technology integration with subject-specific demands, ICT-LEAP

ensures that instructional innovations are both relevant and sustainable.

2.2 Theoretical Framework: Teacher Competency and Technology Integration

The theoretical underpinning of ICT-LEAP is informed by the work of Ertmer and Ottenbreit-Leftwich (2010), who argue that successful technology integration is shaped by teachers’ knowledge, beliefs, and confidence. Their model highlights that while external factors such as access to technology are important, internal factors—particularly teacher competence and self-efficacy—play a critical role in determining how technology is used in the classroom. This perspective supports the program’s emphasis on capacity-building, as enhancing teachers’ ICT competence directly influences their ability to integrate technology effectively.

In addition, the program is aligned with the ICT Competency Framework for Teachers developed by UNESCO (2018), which outlines progressive levels of teacher competence: technology literacy, knowledge deepening, and knowledge creation. ICT-LEAP primarily addresses the first two levels by equipping teachers with foundational digital skills and enabling them to apply these skills in instructional contexts. Through structured training and hands-on application, the program facilitates the transition from basic technology use to more advanced pedagogical integration.

2.3 Policy Framework and Institutional Alignment

The implementation of ICT-LEAP is guided by national education policies and institutional mandates that emphasize digital transformation and quality education. In the Philippines, the Department of Education (DepEd) has introduced the MATATAG Curriculum, which prioritizes the development of 21st-century skills, including digital literacy and technological competence (Department of Education, 2023). This policy direction highlights the need for teachers to adapt to evolving educational demands and integrate ICT effectively in their teaching practices.

Moreover, the program aligns with Republic Act No. 10533, also known as the Enhanced Basic Education Act of 2013, which mandates the integration of technology in the basic education curriculum to produce globally competitive learners (Republic Act No. 10533, 2013). At the institutional level, higher education institutions are mandated to engage in extension services that address community needs and contribute to societal development. ICT-LEAP embodies this mandate by extending institutional expertise to support teacher development in partner schools.

2.4 Practice-Based Framework: Extension Models and Capacity Building

ICT-LEAP is further grounded in practice-based frameworks that emphasize participatory and collaborative approaches to extension work. Traditional extension models often follow a top-down approach, where knowledge is transferred from experts to beneficiaries. However, contemporary practices advocate for a more collaborative model that involves stakeholders in the design and implementation of programs. This approach, often referred to as co-creation, ensures that interventions are responsive to the actual needs of the community.

According to the World Bank, effective teacher professional development programs are characterized by sustained engagement, practical application, and collaboration among participants (World Bank, 2020). ICT-LEAP adopts these principles by incorporating hands-on training, peer collaboration, and continuous feedback mechanisms. This ensures that learning is not only theoretical but also applied, enabling teachers to immediately integrate new skills into their instructional practices.

Additionally, the program draws from best practices in ICT-based professional development, which highlight the importance of contextualization and relevance. Training activities are designed based on identified needs, ensuring that content is aligned with the specific challenges faced by TLE teachers. By situating learning within the teachers' actual teaching context, ICT-LEAP promotes meaningful and sustained application of ICT in the classroom.

2.5 Synthesis of Frameworks

The integration of conceptual, theoretical, policy, and practice-based frameworks provides a comprehensive foundation for ICT-LEAP. The conceptual framework emphasizes meaningful ICT integration, while the theoretical framework highlights the role of teacher competence and self-efficacy. Policy frameworks ensure alignment with national and institutional priorities, and practice-based frameworks guide the collaborative and context-driven implementation of the program.

Together, these frameworks support the overall goal of ICT-LEAP to enhance teachers' ICT competencies and improve instructional practices in TLE. By grounding the program in established theories and best practices, the initiative ensures that its design and implementation are both evidence-based and responsive to the needs of the teaching community.

3. Framework and Related Practices

3.1 Extension Design

This study employed a quantitative descriptive-evaluative research design with qualitative feedback to assess the effectiveness of the PROJECT ICT-LEAP: ICT-Led

Enhancement and Advancement Program for TLE Teachers of Agusan National High School. The design was deemed appropriate as it allowed for the systematic measurement of changes in teachers' ICT competencies before and after the intervention, while also capturing participants' experiences and insights through qualitative methods. The integration of quantitative and qualitative approaches provided a more comprehensive evaluation of the extension program's outcomes, consistent with mixed-method approaches that enhance the validity and depth of program evaluation (Creswell & Plano Clark, 2018).

3.2 Target Beneficiaries

The primary beneficiaries of the extension program were ten (10) Technology and Livelihood Education (TLE) teachers from Agusan National High School. These participants were purposively selected based on their involvement in TLE instruction and their identified need for ICT capacity enhancement. As key implementers of classroom instruction, the teachers served as direct recipients of the training, with the expectation that improved ICT competencies would translate into enhanced teaching practices and better learning experiences for students. This aligns with the principle that teacher capacity-building directly influences instructional quality and student outcomes (UNESCO, 2018).

Table 1: Profile and Description of Target Beneficiaries

Category	Description
Participants	Ten (10) Technology and Livelihood Education (TLE) teachers
Institution	Agusan National High School
Sampling Technique	Purposive sampling
Selection Criteria	Involvement in TLE instruction and identified need for ICT capacity enhancement
Role in the Program	Direct recipients of ICT-LEAP training
Expected Outcomes	Improved ICT competencies, enhanced teaching practices, and better student learning experiences

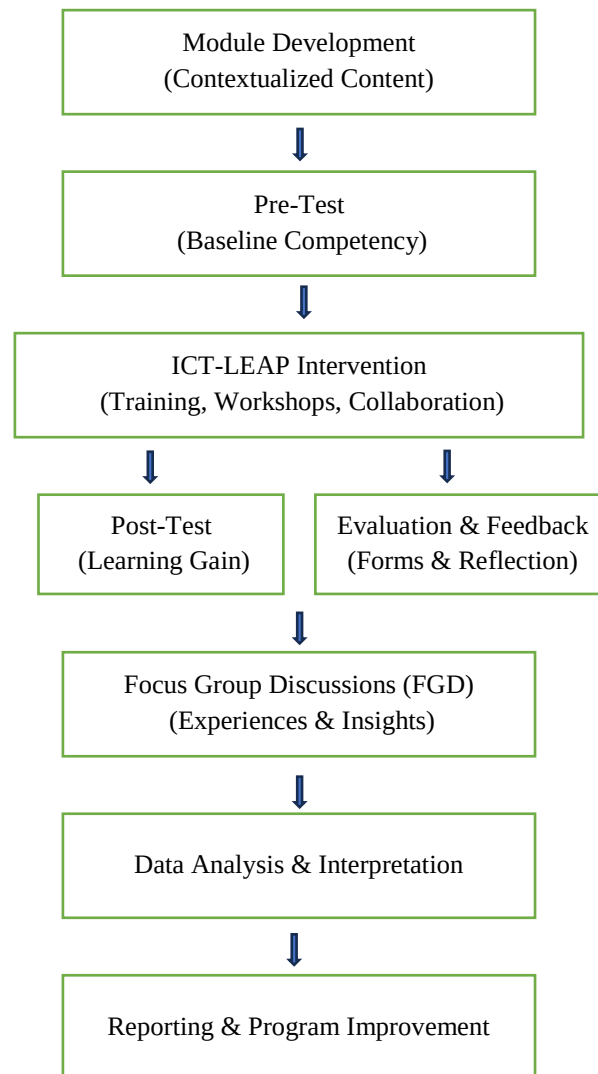
Note. The participants were selected based on their relevance to the implementation of Technology and Livelihood Education (TLE) and their identified need for ICT capacity development. Teacher capacity-building is recognized as a key factor in improving instructional quality and student outcomes (UNESCO, 2018).

3.3 Intervention Design and Implementation

The intervention involved the implementation of the ICT-LEAP Program, a structured capacity-building initiative designed to enhance teachers' ICT knowledge and skills. The program consisted of a series of training modules covering Advanced Canva, productivity tools, web development, and MySQL, which are relevant to TLE

instruction and digital content creation. These modules were delivered through a combination of lectures, demonstrations, hands-on workshops, and collaborative learning activities to ensure active participation and practical application. Such approaches are supported by research emphasizing that effective professional development must be interactive, practice-oriented, and sustained over time (Desimone, 2009).

Figure 1. ICT-LEAP Implementation Framework (Cyclical Model)



Note. The framework illustrates the iterative and cyclical nature of the ICT-LEAP extension program, beginning with needs assessment and progressing through intervention, evaluation, and feedback mechanisms. The inclusion of a feedback loop highlights continuous program improvement, consistent with evidence-based models of teacher professional development and extension practice (UNESCO, 2018; World Bank, 2020).

The implementation followed a phased approach. Initially, a pre-test was administered to establish baseline data on participants' ICT competency levels. This was followed by the conduct of training sessions, where participants engaged in guided practice and skill-building activities. After the completion of the modules, a post-test was administered to measure improvements in ICT knowledge and skills. The structured delivery ensured that learning objectives were

systematically achieved while allowing participants to apply newly acquired competencies in simulated and actual instructional contexts, which is consistent with outcome-based training models (Kirkpatrick & Kirkpatrick, 2006). To further illustrate the sequence and duration of each phase of the intervention, the implementation timeline is presented in and Table 1

Table 1: Gantt Timeline of ICT-LEAP Program Implementation

Activity / Phase	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Planning and Coordination	■					
Training Needs Assessment & FGD	■	■				
Development of Training Modules		■	■			
Pre-Test Administration			■			
ICT-LEAP Training Implementation				■	■	
Hands-on Workshops & Output Development				■	■	
Post-Test Administration					■	
Evaluation Forms & Feedback Collection					■	
Focus Group Discussions (FGD)						■
Data Analysis & Interpretation						■
Report Writing & Documentation						■

3.4 Data Collection Methods

Data were collected using multiple instruments to ensure triangulation and reliability of findings. Quantitative data were gathered through pre-test and post-test assessments, which measured participants' ICT competency levels before and after the intervention. Additionally, evaluation forms were used to assess the acceptability and usability of the training modules.

To complement the quantitative data, focus group discussions (FGDs) were conducted to gather qualitative insights regarding participants' experiences, challenges, and perceived benefits of the program. These discussions provided deeper understanding of how the intervention influenced teaching practices and professional development. The use of both quantitative and qualitative data collection methods ensured a holistic evaluation of the extension program, consistent with triangulation strategies that strengthen research validity (Creswell & Plano Clark, 2018).

3.5 Implementation Strategies and Participation Mechanisms

The ICT-LEAP program adopted participatory and collaborative learning strategies to enhance engagement and

knowledge retention. Participants were actively involved in hands-on activities, peer collaboration, and guided practice sessions. The training emphasized real-world application, allowing teachers to develop instructional materials and outputs that could be directly utilized in their classes. This approach aligns with constructivist learning principles, which emphasize active participation and knowledge construction through experience (Vygotsky, 1978).

Participation mechanisms included interactive workshops, group-based tasks, and continuous feedback sessions. These strategies fostered a supportive learning environment where participants could share experiences, exchange ideas, and collaboratively solve challenges related to ICT integration. Such an approach reflects best practices in teacher professional development that promote sustained engagement and collaborative learning (Desimone, 2009).

3.6 Partnerships and Collaboration

The implementation of the ICT-LEAP program was made possible through collaboration between the City College of Cagayan de Oro (CCCDO) and the Department of Education (DepEd) Schools Division. This partnership ensured that the program was aligned with curriculum

standards, institutional goals, and the actual needs of the school. The collaboration also facilitated resource sharing, including expertise, training materials, and technical support, thereby enhancing the overall effectiveness of the intervention. Collaborative partnerships are recognized as critical in scaling educational innovations and strengthening program sustainability (World Bank, 2020).

3.7 Data Analysis

Quantitative data from the pre-test and post-test were analyzed using descriptive statistics, including mean and standard deviation, to determine the level of ICT competency before and after the intervention. Comparative analysis was used to identify changes and improvements in participants' performance, which is appropriate for evaluating intervention effectiveness in small-group educational studies (Fraenkel et al., 2019).

Qualitative data obtained from focus group discussions were analyzed using thematic coding, which involved identifying recurring patterns, categorizing responses, and generating themes that reflect participants' experiences. This method allowed for a deeper interpretation of the program's impact beyond numerical data and is widely used in qualitative educational research (Braun & Clarke, 2006).

3.8 Ethical Considerations

Ethical standards were strictly observed throughout the conduct of the study. Participants were informed of the purpose of the extension program and their voluntary participation was ensured through informed consent. Confidentiality and anonymity of responses were maintained, and data collected were used solely for research and program evaluation purposes. Participants were also assured that their responses would not affect their professional standing, thereby encouraging honest and accurate feedback. These practices align with established ethical standards in educational research (American Educational Research Association, 2011).

3.9 Summary

Overall, the extension design and methodology of ICT-LEAP reflect a systematic, participatory, and evidence-based approach to capacity-building. By integrating structured training, collaborative learning strategies, and rigorous evaluation methods, the program ensures that the intervention is both effective and responsive to the needs of TLE teachers. Such an approach is consistent with best practices in ICT integration and teacher professional development (UNESCO, 2018; World Bank, 2020).

4. Results and Outputs

The results of the ICT-LEAP extension program provide strong evidence of its effectiveness in enhancing the ICT competencies of Technology and Livelihood Education

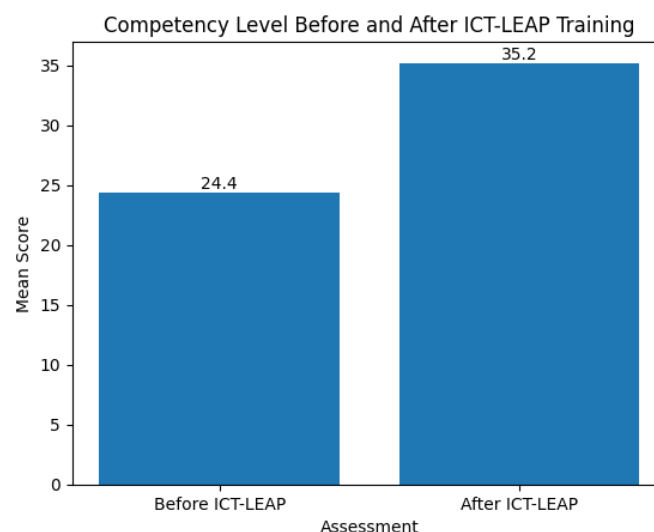
(TLE) teachers. As shown in **Table 2** and **Figure 3**, quantitative findings reveal a substantial improvement in participants' performance following the intervention.

Table 2: Pre-test and Post-test ICT Competency Scores (Mean & SD)

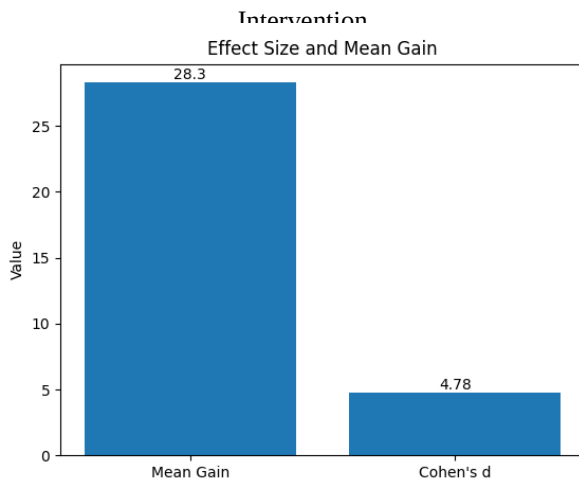
Measure	Mean	Standard Deviation	Interpretation
Pre-test	24.4	3.86	Intermediate
Post-test	35.2	2.39	Advanced

Prior to the training, the teachers demonstrated an overall mean score of 24.4, which falls under the Intermediate competency level (20–29). After the implementation of the ICT-LEAP program, the mean score significantly increased to 35.2, placing participants in the Advanced competency level (30–40). This shift indicates that the program successfully elevated teachers' ICT proficiency from moderate to high levels of competence.

Figure 3. Competency Level Before and After ICT-LEAP Training

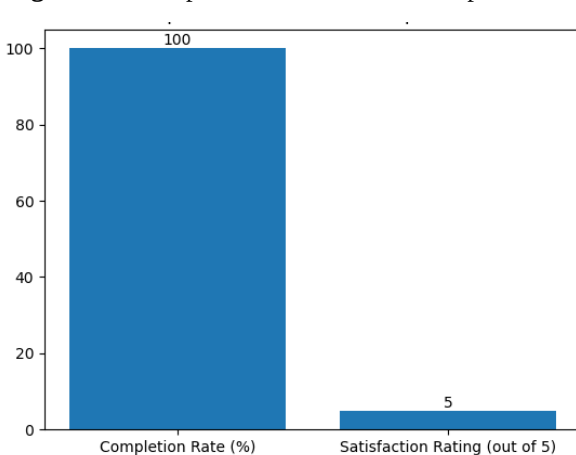


In terms of learning gains, the program yielded a mean increase of 28.3 points, reflecting a statistically significant improvement in ICT knowledge and skills ($p < 0.001$). As illustrated in Figure 4, the magnitude of this improvement is further supported by a Cohen's d value of 4.78, which indicates a very large effect size. This suggests that the intervention had a substantial impact on participants' learning outcomes, far exceeding the threshold typically considered for strong educational interventions. Such findings demonstrate that structured, hands-on, and context-driven training programs can effectively enhance teacher competencies in ICT integration.

Figure 4. Effect Size and Mean Gain of ICT-LEAP

Furthermore, the reduction in standard deviation values from 3.86 (pre-test) to 2.39 (post-test), as presented in Table 2, indicates increased consistency in participants' performance after the training. This suggests that the program not only improved individual competencies but also contributed to a more uniform level of ICT proficiency among teachers. The narrowing of performance variability implies that the intervention was effective across participants, regardless of their initial skill levels.

Beyond quantitative measures, the program also yielded positive qualitative outcomes. As reflected in Figure 5, participants reported high levels of engagement and satisfaction with the training, as evidenced by a 100% completion rate and a perfect satisfaction rating (5/5). Feedback gathered during evaluation and focus group discussions indicated that teachers found the training relevant, practical, and directly applicable to their instructional needs. Participants highlighted improvements in their ability to create digital instructional materials, utilize productivity tools, and integrate ICT effectively into TLE lessons. These findings align with established research emphasizing that meaningful professional development must be practical, collaborative, and aligned with teachers' instructional contexts (UNESCO, 2018).

Figure 5. Participant Satisfaction and Completion Rate

The outcomes of the ICT-LEAP program extend beyond immediate skill acquisition, demonstrating broader educational impact. Enhanced teacher competencies are expected to translate into improved instructional practices, increased student engagement, and more effective delivery of TLE content. By equipping teachers with advanced ICT skills, the program contributes to the development of digitally competent educators capable of responding to the demands of 21st-century learning environments. Furthermore, the success of the intervention highlights the potential of extension programs as effective mechanisms for bridging competency gaps and supporting continuous professional development.

Overall, the findings confirm that ICT-LEAP is a high-impact extension initiative that effectively transforms identified training needs into measurable outcomes. The significant improvements in competency levels, strong effect size, and positive participant feedback collectively demonstrate that the program achieved its intended objectives. These results reinforce the value of evidence-based, context-driven extension programs in advancing educational quality and innovation, consistent with global efforts to strengthen ICT integration in teaching and learning (World Bank, 2020).

5. Lessons Learned and Sustainability

The implementation of the ICT-LEAP extension program highlights the critical importance of contextualized, needs-based, and participatory professional development in enhancing teachers' ICT competencies. Findings revealed that grounding the intervention on training needs assessment and focus group discussions ensured alignment with the actual instructional challenges of TLE teachers. The effectiveness of hands-on, collaborative, and practice-oriented learning strategies further demonstrated that teachers learn best when actively engaged in authentic tasks. However, challenges such as varying levels of ICT proficiency, limited time, and occasional technical constraints underscored the need for differentiated instruction, flexible delivery, and sustained mentoring mechanisms. These insights suggest that extension programs must move beyond one-time training and instead adopt continuous, adaptive models of capacity-building to ensure inclusive and meaningful learning outcomes.

In terms of sustainability and scalability, ICT-LEAP adopts a multi-layered strategy anchored on expansion, partnerships, and continuous capacity development. The planned expansion of the program to schools within East 2 District—such as Bugo National High School, Tablon National High School, and Balubal National High School—demonstrates its potential for replication and broader community impact. Sustained collaboration with institutional and local stakeholders, including City College

of Cagayan de Oro (CCCDO), City Kitchen, TIDMAC, and the Local Government Unit (LGU), ensures the availability of resources, technical expertise, and organizational support. Additionally, the development of advanced ICT modules, ongoing mentorship, and the conduct of an ICT Skills Competition (May 2026) serve as mechanisms to reinforce learning, promote continuous engagement, and institutionalize the program as a long-term professional development initiative rather than a short-term intervention.

From a policy perspective, the outcomes of ICT-LEAP offer significant implications for key educational stakeholders. For Department of Education (DepEd), the findings reinforce the need to strengthen school-based and division-level ICT capacity-building programs aligned with curriculum reforms such as MATATAG, ensuring that teacher training is continuous, context-specific, and practice-driven. For Commission on Higher Education (CHED), the program highlights the critical role of higher education institutions in delivering community-responsive extension services that directly support basic education sectors, thereby bridging theory and practice. Meanwhile, for Local Government Unit (LGUs), ICT-LEAP underscores the importance of investing in digital infrastructure, local partnerships, and capacity-building initiatives to support educational innovation at the grassroots level. Collectively, these policy directions affirm that sustainable educational transformation requires coordinated efforts among national agencies, higher education institutions, and local stakeholders, positioning ICT-LEAP as a replicable model for advancing ICT integration in teaching and learning.

6. Conclusion and Recommendations

The ICT-LEAP extension program significantly contributed to enhancing the ICT competencies of Technology and Livelihood Education (TLE) teachers through a structured, needs-based, and research-informed intervention. The findings demonstrated a marked improvement in participants' competency levels, supported by substantial mean gains and a very large effect size, indicating the effectiveness of the program in strengthening both technical skills and pedagogical application of ICT. Beyond measurable outcomes, the program fostered increased confidence, engagement, and the practical integration of digital tools in teaching. These results affirm that well-designed extension initiatives can successfully bridge competency gaps and translate knowledge into meaningful impact, highlighting the vital role of higher education institutions in supporting basic education through responsive and community-oriented programs.

In light of these findings, it is recommended that teachers continuously integrate ICT into their instructional practices and engage in sustained professional development, while educational institutions institutionalize similar capacity-

building initiatives and strengthen collaborative partnerships. At the policy level, the Department of Education (DepEd) should enhance support for continuous, context-based ICT training, the Commission on Higher Education (CHED) should further promote extension programs that directly impact basic education, and Local Government Unit (LGUs) should invest in digital infrastructure and community-based capacity-building. Future research may explore long-term impacts, comparative digital tools, and advanced statistical approaches to strengthen evidence-based extension practice.

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