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Information and Communications Technology (ICT) Competence, Workload and Technostress Among Public School Teachers

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Abstract

This study examined information and communications technology (ICT) competence, workload, and technostress among public elementary school teachers in Ubay I, Ubay II, and Ubay III Districts, Bohol, during School Year 2026–2027, focusing on demographic differences and the predictive contributions of ICT competence and workload to technostress. Using a quantitative predictive-inferential design, the study surveyed 219 teachers through a structured questionnaire. Data were analyzed using descriptive statistics, Mann–Whitney U and Kruskal–Wallis tests, post hoc comparisons, and multiple linear regression. Results showed moderate ICT competence (M = 3.01), workload (M = 2.77), and technostress (M = 2.69). Pedagogical ICT skills were the least developed competence dimension (M = 2.92), while time pressure (M = 2.95) and techno-invasion (M = 2.98) were the most prominent workload and technostress concerns, respectively. Technostress differed significantly by age, position, and ICT training hours. ICT competence and workload jointly explained 35.2% of technostress variance (R^2 = .352), but only workload was a significant individual predictor (β = .540, $p < .001$). The findings indicate that workload demands are more strongly associated with technostress than ICT competence within this sample. Schools should prioritize workload rationalization, manageable digital communication, practical ICT training, and accessible technical support. The district-specific, questionnaire-based design limits broader generalization, while substantial unexplained variance suggests additional influences. By informing locally responsive interventions, the study supports teacher well-being, sustainable digital integration, and Sustainable Development Goals 4 (Quality Education) and 8 (Decent Work and Economic Growth). Its evidence may guide district supervisors and school administrators in prioritizing resources.

Keywords: Digital Integration, ICT Competence, Public School Teachers, Teacher Workload, Technostress, Workload Rationalization

1. Introduction

Digital transformation in education requires teachers to develop technical proficiency, pedagogical ICT skills, and confidence in integrating technology into classroom instruction. International competency standards emphasize continuous professional development and effective ICT integration to support quality education (UNESCO, 2022). In the Philippines, the Department of Education Computerization Program provides a policy framework for strengthening ICT access and utilization in public schools (Department of Education, 2023). Despite these developments, teachers continue to encounter challenges involving limited ICT competence, extensive teaching responsibilities, administrative reporting, and insufficient time for technology-related tasks. Such demands may

contribute to techno-overload, techno-invasion, techno-complexity, and techno-insecurity, particularly when available competencies and institutional resources are inadequate (Ragu-Nathan et al., 2008). Philippine educational policies emphasize digital proficiency and teacher welfare through Republic Act No. 10533 (2013) and Republic Act No. 4670 (1966). However, balancing instructional responsibilities with expanding digital requirements remains a concern. Previous research suggests that ICT competence may help reduce technology-related strain, whereas excessive workload can intensify teachers' experiences of technostress (Caratiquit & Javier, 2025; Delgado & Dayaganon, 2024). In Ubay, Bohol, public elementary school teachers across three districts manage classroom instruction alongside online and offline reporting requirements. The study therefore investigates how ICT competence and workload relate to technostress and seeks to develop practical interventions involving ICT capability development, workload management, and district-level support.

ICT competence encompasses technical skills, pedagogical technology integration, and ICT self-efficacy. Technical skills involve operating digital devices, managing software, accessing online resources, and creating instructional materials (Mishra & Koehler, 2006; Schmidt et al., 2009). Pedagogical ICT skills enable teachers to incorporate technology into lesson planning, collaborative learning, assessment, and learner monitoring (Voogt et al., 2013). ICT self-efficacy is relevant to teachers' confidence in using digital technologies (Caratiquit & Javier, 2025). Related research involving students has also examined the relationship between ICT self-efficacy and computer and information literacy (Hatlevik et al., 2018). Teacher workload includes instructional responsibilities, ICT-related tasks, and time pressure. Excessive demands may deplete teachers' physical and psychological resources, particularly when administrative reporting and technology requirements overlap with classroom responsibilities (Bakker & Demerouti, 2007). Teaching load involves classroom management, differentiated instruction, and additional school responsibilities (Ingersoll, 2001), while time pressure emerges when available working hours are insufficient to complete instructional and administrative tasks (Longmuir & McKay, 2024). Technostress refers to psychological strain associated with technology use and changing digital demands (Ragu-Nathan et al., 2008). Techno-overload results from increased work volume and pace (Ayyagari et al., 2011), while techno-invasion occurs when digital communication interferes with personal time (Tarafdar et al., 2019). Techno-complexity reflects difficulties in mastering technologies (Ragu-Nathan et al., 2008), whereas techno-insecurity concerns anxiety about professional competence and performance in technology-intensive environments (Tams et al., 2014). These pressures may contribute to burnout and reduced job satisfaction (Tu et al., 2025). Empirical studies demonstrate varying relationships among ICT competence, workload, and technostress. Delgado and Dayaganon (2024) reported that higher technological pedagogical competence was associated with lower technostress among Philippine secondary teachers. Wang et al. (2023) identified technology intensity and work-family conflict as contributing factors among primary school teachers, while Wang and Li (2019) emphasized mismatches between technological demands and individual capabilities. Related studies highlight the importance of coping strategies, digital literacy, and institutional support. Signo et al. (2025) associated adaptive coping and workload management with technological proficiency, while Valiao (2025) emphasized institutional training and technical support. Wang et al. (2023) identified technological overload and uncertainty as major stressors, whereas Zivi et al. (2025) examined digital self-efficacy and cognitive emotion regulation as protective factors against technostress. Philippine research also demonstrates the relevance of technostress to teacher performance and well-being. Cahapay and Bangoc (2021) reported technostress among teachers during emergency remote instruction, while Elcano (2025) found that technostress did not significantly affect job satisfaction among university faculty. International findings similarly indicate that ICT competence may support teacher well-being (Chen et al., 2024), whereas technological demands may increase burnout when organizational support is insufficient (Tu et al., 2025). Collectively, the literature suggests that teachers' experiences of technostress are shaped by the interaction between their digital capabilities, workload demands, and available institutional resources.

Internationally, educational technology policies emphasize teacher competency development, appropriate digital infrastructure, and institutional readiness. The UNESCO ICT Competency Framework for Teachers establishes standards for integrating technology into educational practice (UNESCO, 2018), while UNESCO's guidelines for ICT policies and masterplans emphasize coordinated planning, professional development, and sustainable implementation (UNESCO, 2022). International research identifies technostress as a continuing concern across educational settings. Studies involving primary, secondary, and higher education teachers report that excessive technology use, workload pressures, inadequate digital competence, and organizational conditions influence technology-related strain (Wang et al., 2023; Zivi et al., 2025). In the Philippines, Republic Act No. 10533 (2013), DepEd Order No. 42, s. 2017 (Department of Education, 2017), and DepEd Order No. 16, s. 2023 (Department of Education, 2023) establish a policy context for curriculum implementation, professional teaching standards, and ICT capability development. Republic Act No. 4670 (1966) further emphasizes the protection of public school teachers' professional welfare and working conditions. Within Ubay I, Ubay II, and Ubay III Districts, elementary teachers face the combined demands of classroom instruction, digital reporting, and technology-enhanced learning. Limited ICT competence and connectivity constraints may complicate these responsibilities. Examining these conditions provides localized evidence for addressing teacher workload and technostress while supporting effective ICT integration.

The study is anchored on six complementary theoretical perspectives explaining how technological capabilities and occupational demands influence teachers' experiences of technostress. The Job Demands-Resources model explains that excessive work demands may contribute to psychological strain, whereas professional resources,

including competence and organizational support, may help manage these pressures (Bakker & Demerouti, 2007). In this study, teaching load, ICT-related workload, and time pressure represent job demands, while ICT competence represents a potential professional resource. Person-Environment Fit theory explains stress as a consequence of mismatches between individual capabilities and environmental demands. When teachers' technological skills are insufficient for their assigned responsibilities, the resulting imbalance may increase strain. This perspective is grounded in the work of Caplan (1971) and Edwards (1991). Self-Efficacy theory emphasizes individuals' beliefs in their ability to accomplish tasks successfully. Applied to technology integration, teachers with stronger ICT self-efficacy may demonstrate greater confidence in managing digital instructional responsibilities (Bandura, 1977). The Technostress Creators model identifies technology-related conditions that contribute to psychological strain, including techno-overload, techno-invasion, techno-complexity, and techno-insecurity. These dimensions provide the basis for examining teachers' experiences of technostress (Ragu-Nathan et al., 2008). The Technological Pedagogical Content Knowledge framework explains the integration of technological, pedagogical, and content knowledge in effective teaching (Mishra & Koehler, 2006). It supports the assessment of teachers' technical and pedagogical ICT competencies. Conservation of Resources theory explains stress through the threatened or actual loss of valued resources, including time, energy, and professional capabilities (Hobfoll, 1989). In technology-intensive educational environments, increasing workload and insufficient support may place additional pressure on these resources. The study's conceptual framework integrates teachers' demographic characteristics, ICT competence, workload, and technostress. ICT competence is examined through technical skills, pedagogical ICT skills, and ICT self-efficacy. Workload is assessed through teaching load, ICT-related workload, and time pressure, while technostress is measured through techno-overload, techno-invasion, techno-complexity, and techno-insecurity. These variables provide the foundation for comparative and predictive analyses and the development of a proposed action plan.

Existing literature establishes the relevance of ICT competence, workload, and institutional support to teachers' experiences of technostress. However, many studies focus on higher education institutions, secondary schools, or technology-intensive environments, leaving rural public elementary schools comparatively less examined. Philippine studies provide evidence of technology-related stress and professional adaptation (Cahapay & Bangoc, 2021; Delgado & Dayaganon, 2024; Valiao, 2025), but localized investigations integrating ICT competence, workload dimensions, and technostress among public elementary teachers remain limited. Furthermore, existing findings vary regarding the influence of technological competence and demographic characteristics on technostress. These differences support the need to examine the variables within specific educational settings rather than assuming that relationships observed elsewhere apply uniformly. This study addresses these gaps by examining public elementary school teachers in Ubay I, Ubay II, and Ubay III Districts. It assesses ICT competence, workload, and technostress; determines differences across selected demographic characteristics; and investigates whether ICT competence and workload significantly predict technostress. The findings serve as a basis for a localized action plan emphasizing practical ICT development, workload rationalization, and institutional support.

The study aligns primarily with Sustainable Development Goal 4 (Quality Education) by examining teachers' digital competence and the professional conditions affecting effective technology integration. Strengthening technical and pedagogical ICT capabilities may support instructional quality, teacher professional development, and more sustainable use of educational technology. The investigation also relates to SDG 3 (Good Health and Well-Being) through its focus on technostress and workload-related psychological strain. Identifying technology-related pressures can inform strategies that promote healthier working conditions and protect teachers' professional well-being. Additionally, SDG 8 (Decent Work and Economic Growth) is relevant to the study's emphasis on reasonable workload distribution, time management, and supportive working conditions. The proposed action plan seeks to address excessive technology-mediated demands while maintaining teachers' capacity to perform their instructional responsibilities. These connections position the study within educational quality, occupational well-being, and sustainable professional practice.

The study contributes to educational sustainability by providing evidence for improving teachers' ICT competence while addressing the workload conditions that may affect instructional effectiveness. Its emphasis on technical skills, pedagogical ICT integration, and self-efficacy supports continuing professional development and effective classroom technology use. From a technological sustainability perspective, the research emphasizes the importance of aligning digital responsibilities with teachers' capabilities and available institutional resources. Its findings can guide practical ICT training, technical assistance, and more manageable digital processes. Institutional sustainability is addressed through the proposed action plan for workload rationalization and technostress management. By identifying major workload pressures and technology-related difficulties, the study can inform school administrators and district supervisors in developing responsive support systems and improving the allocation of professional resources. The study also has implications for social and socioeconomic sustainability by emphasizing teacher well-being, reasonable working conditions, and the efficient use of professional time. Reducing unnecessary administrative burdens and strengthening technology-related support may help teachers maintain their instructional responsibilities while managing the demands of digital education. Overall, the research provides a localized basis for integrating ICT capability development, workload management, and teacher welfare into sustainable educational practices in Ubay I, Ubay II, and Ubay III Districts.

2. Material and methods

2.1 Research Design

The study utilized a quantitative predictive inferential design to determine the levels of ICT competence, workload, and technostress and examine the predictive contributions of ICT competence and workload to technostress. Structured questionnaires using a four-point Likert scale measured ICT competence in terms of technical skills, pedagogical ICT skills, and ICT self-efficacy; workload in terms of teaching load, ICT-related workload, and time pressure; and technostress in terms of techno-overload, techno-invasion, techno-complexity, and techno-insecurity. The design incorporated descriptive and inferential analyses to examine differences across demographic groups and relationships among the study variables.

2.2 Locale of the Study

The study was conducted in the Municipality of Ubay, located in eastern Bohol, Central Visayas, Philippines, approximately 128 kilometers northeast of Tagbilaran City. The municipality comprises coastal and inland communities characterized by agricultural and fishing activities. It has three public school supervisory districts, namely Ubay I, Ubay II, and Ubay III, under the Schools Division of Bohol. These districts represent rural educational settings with varying internet connectivity, access to digital devices, and teaching responsibilities, making them appropriate for examining ICT competence, workload, and technostress among public elementary school teachers.

2.3 Respondents of the Study

The target population consisted of 483 public elementary school teachers from 45 schools across the three districts of Ubay, Bohol. Ubay I District had 162 teachers from 15 schools, Ubay II District had 149 teachers from 11 schools, and Ubay III District had 172 teachers from 19 schools. The respondents were permanent public elementary school teachers actively teaching during School Year 2026–2027, excluding school administrators and non-teaching personnel. Their demographic characteristics included age, sex, position, years in service, and hours of ICT-related training attended during the preceding five years.

2.4 Sample and Sampling Procedure

The study employed stratified random sampling to select 219 respondents from the total population of 483 teachers. The sample size was determined using Yamane's (1967) formula for finite populations at a 95% confidence level and a 5% margin of error. Respondents were proportionally allocated across the three districts, with 73 teachers from Ubay I, 70 from Ubay II, and 76 from Ubay III. Simple random sampling was applied within each district to ensure representation across demographic characteristics and school settings. School identities were withheld to maintain confidentiality.

2.5 Research Instrument

The study utilized a modified structured questionnaire consisting of four parts. The first gathered respondents' demographic information, including age, sex, position, years in service, and ICT training hours attended during the previous five years. The second assessed ICT competence using a 21-item instrument modified from Schmidt et al. (2009), based on the Technological Pedagogical Content Knowledge framework. It measured technical skills, pedagogical ICT skills, and ICT self-efficacy, with seven items for each dimension. The third measured workload through a 21-item questionnaire modified from Hart and Staveland's (1988) NASA-TLX workload index and Karasek's (1985) Job Content Questionnaire. It assessed teaching load, ICT-related workload, and time pressure, each comprising seven items. The fourth evaluated technostress using a 20-item instrument modified from Ragu-Nathan et al. (2008). It measured techno-overload, techno-invasion, techno-complexity, and techno-insecurity, with five items per dimension. All instruments used a four-point Likert scale ranging from 1 (Strongly Disagree) to 4 (Strongly Agree). The modified instruments underwent expert validation and pilot testing among teachers excluded from the actual study. Internal consistency was assessed using Cronbach's alpha, yielding reliability coefficients of 0.91 for ICT competence, 0.89 for workload, and 0.93 for technostress, indicating high internal consistency.

2.6 Data Gathering Procedure

The researcher secured permission from the Schools Division Superintendent of Bohol and the district supervisors of Ubay I, Ubay II, and Ubay III before coordinating with school principals for questionnaire administration. Informed consent forms were distributed to participants, emphasizing voluntary participation and confidentiality. Data collection employed printed questionnaires as the primary method, supplemented by Google Forms in schools with reliable internet connectivity. Printed questionnaires were distributed during faculty meetings, ICT training sessions, or designated research periods, requiring approximately 20–25 minutes to complete. School ICT coordinators and master teachers assisted in questionnaire distribution, collection, and respondent support. Online questionnaires were distributed through official communication channels, including DepEd Commons, email, and district Messenger groups. Unique respondent codes were used to monitor completion while protecting anonymity. Teachers unable to participate during scheduled sessions were provided take-home questionnaires,

while reminders and coordinator follow-ups supported data collection. Completed printed questionnaires were double-encoded for accuracy, while online responses were exported and consolidated. The collected data were screened for missing values and outliers before statistical analysis.

2.7 Data Analysis Techniques

The study employed descriptive and inferential statistical techniques to analyze the collected data. Frequency counts and percentages described respondents according to age, sex, position, years in service, and ICT training hours. Weighted means and standard deviations determined the levels of ICT competence, workload, and technostress based on the four-point Likert scale. To examine differences in ICT competence, workload, and technostress across demographic groups, the methodology specified analysis of variance (ANOVA). Multiple linear regression was employed to determine whether ICT competence and workload significantly predicted technostress. Jamovi software was identified for statistical analysis.

3. Results and Discussion

3.1 Demographic Profile and Levels of ICT Competence, Workload, and Technostress

3.1.1 Demographic Profile of Public Elementary School Teachers

The respondents were predominantly aged 33–39 years (30.60%), followed by 26–32 years (26.50%) and 40–46 years (26.00%). Most were female (90.00%), while males accounted for 10.00%. Teacher III represented the largest group (63.50%), followed by Teacher I (29.70%), Master Teacher I (5.50%), and Master Teacher II (1.40%). Regarding teaching experience, 32.40% had served for 6–10 years, followed by 24.20% with 11–15 years and 20.50% with 0–5 years. Most respondents (78.10%) had attended only 0–24 hours of ICT training during the preceding five years. The findings indicate that respondents were primarily early- to middle-career teachers with relatively limited ICT training exposure. These characteristics provide context for examining differences in digital competence, workload, and technostress. Cahapay and Bangoc (2021) reported significant differences in technostress according to age, gender, and teaching experience, whereas Valiao (2025) found no significant demographic differences. The limited training exposure also highlights the relevance of professional development, consistent with Delgado and Dayaganon (2024) and Signo et al. (2025), who emphasized ICT competence development and workload-management support.

3.1.2 Level of ICT Competence Among Public Elementary School Teachers

The respondents demonstrated an overall moderate level of ICT competence, with a composite mean of 3.01 (SD = 0.497). Technical skills and ICT self-efficacy obtained identical means of 3.05, while pedagogical ICT skills registered the lowest mean of 2.92. These findings indicate that teachers possess functional technological capabilities and confidence in using digital tools, although their ability to integrate ICT into instructional practices remains comparatively less developed. The findings suggest that technical proficiency and confidence do not necessarily translate into equally strong pedagogical ICT integration. This distinction is consistent with the Technological Pedagogical Content Knowledge framework, which emphasizes the integration of technological, pedagogical, and content knowledge. Delgado and Dayaganon (2024) similarly emphasized the relevance of technological pedagogical competence in managing technology-related demands. The findings underscore the importance of professional development that addresses classroom applications of ICT rather than technical skills alone.

3.1.3 Level of Workload Among Public Elementary School Teachers

The respondents reported an overall moderate workload, with a composite mean of 2.77 (SD = 0.526). Time pressure obtained the highest mean of 2.95, followed by ICT-related workload at 2.77 and teaching load at 2.61. The findings indicate that overlapping responsibilities, deadlines, and technology-mediated tasks contribute more prominently to perceived workload than regular teaching assignments alone. The findings reflect the Job Demands–Resources perspective, which explains how sustained occupational demands may contribute to psychological strain. Teachers' experiences of time pressure suggest that the organization and timing of responsibilities are important considerations in workload management. Longmuir and McKay (2024) emphasized that teacher workload strain involves not only the quantity of work but also its density and intensity. These findings support examining administrative requirements and ICT-related tasks alongside classroom teaching responsibilities.

3.1.4 Level of Technostress Among Public Elementary School Teachers

The overall technostress level was moderate, with a composite mean of 2.69 (SD = 0.535). Techno-invasion recorded the highest mean of 2.98, followed by techno-overload at 2.79 and techno-complexity at 2.57. Techno-insecurity obtained the lowest mean of 2.44, interpreted as low. These results indicate that the intrusion of technology into personal time and the increasing volume of digital responsibilities were the most prominent sources of technostress. The findings suggest that technology-related strain arises more strongly from continuous connectivity and expanding digital responsibilities than from concerns about technological replacement or professional insecurity. This pattern is consistent with the technostress framework of Ragu-Nathan et al. (2008),

which identifies techno-invasion and techno-overload as sources of occupational strain. Pondang (2026) similarly described blurred work-life boundaries, increasing technological demands, and emotional fatigue among Philippine teachers. The results emphasize the importance of reasonable digital communication practices and manageable technology-related responsibilities.

3.2 Differences in ICT Competence, Workload, and Technostress According to Demographic Characteristics

3.2.1 Differences in ICT Competence According to Demographic Profile

ICT competence differed significantly according to age ($\chi^2 = 12.20$, $p = .016$), position ($\chi^2 = 19.20$, $p = .001$), and years in service ($\chi^2 = 14.50$, $p = .006$). Significant age differences occurred between teachers aged 33–39 and 40–46 years. Positional differences involved comparisons between Teacher I and Master Teacher I, Teacher I and Master Teacher II, Teacher III and Master Teacher II, and Master Teacher I and Master Teacher II. Differences in teaching experience were concentrated in comparisons involving teachers with 21 years or more of service. However, ICT competence did not significantly differ according to gender ($U = 1867$, $p = .286$) or ICT training hours ($\chi^2 = 7.33$, $p = .062$). The findings indicate that ICT competence varies across selected career and professional characteristics rather than uniformly across all demographic groups. Magtoltol and Oropa (2025) and Carogong and Tepacia (2025) similarly identified demographic differences in teachers' digital competencies. However, Varilla et al. (2024) reported no significant differences in several TPACK domains according to age, sex, and teaching experience. The present findings suggest that professional position and teaching experience may be relevant to ICT competence, although training duration alone did not significantly distinguish competence levels.

3.2.2 Differences in Workload According to Demographic Profile

Teachers' workload differed significantly according to age ($\chi^2 = 16.10$, $p = .003$) and position ($\chi^2 = 13.90$, $p = .003$). The significant age comparison involved teachers aged 33–39 and 40–46 years ($W = -5.602$, $p < .001$). Significant positional comparisons involved Teacher I and Master Teacher II, Teacher III and Master Teacher II, and Master Teacher I and Master Teacher II. No significant differences were observed according to gender ($U = 1797$, $p = .189$), years in service ($\chi^2 = 5.90$, $p = .207$), or ICT training hours ($\chi^2 = 5.85$, $p = .119$). These findings suggest that workload differences are associated more closely with age groups and professional positions than with gender, length of service, or training exposure. Pantao (2024) and Impuesto (2024) examined the relevance of demographic and professional characteristics to teachers' working conditions. Moral et al. (2024) likewise highlighted the responsibilities associated with Master Teacher positions. The findings support examining differentiated professional responsibilities when developing workload-management strategies.

3.2.3 Differences in Technostress According to Demographic Profile

Technostress differed significantly according to age ($\chi^2 = 11.20$, $p = .024$), position ($\chi^2 = 12.50$, $p = .006$), and ICT training hours ($\chi^2 = 11.40$, $p = .010$). However, no individual age-group comparison reached statistical significance in the reported post hoc analysis. Significant positional differences involved Master Teacher II compared with Teacher I, Teacher III, and Master Teacher I. For ICT training, significant differences occurred between the 0–24 and 49–60 hour groups and between the 25–48 and 49–60 hour groups. Technostress did not significantly differ according to gender ($U = 1917$, $p = .374$) or years in service ($\chi^2 = 7.24$, $p = .124$). The findings indicate that technostress varies across selected demographic and professional characteristics, particularly position and ICT training exposure. Valiao (2025) similarly reported no significant technostress differences according to sex and teaching experience, while Pagán-Garbín et al. (2024) identified age-related differences in technostress. Bacud (2025) emphasized the relevance of organizational roles and responsibilities to technology-related strain. Magtoltol and Oropa (2025) also identified ICT training as a factor associated with digital literacy. However, the present study's training comparisons do not establish whether greater training exposure increases or decreases technostress because the reported comparisons do not provide group-level direction.

3.3 ICT Competence and Workload as Predictors of Technostress

3.3.1 Combined Predictive Contribution of ICT Competence and Workload

Multiple linear regression revealed that ICT competence and workload jointly significantly predicted technostress, $F(2, 216) = 58.70$, $p < .001$. The model yielded $R = .594$, $R^2 = .352$, and adjusted $R^2 = .346$, indicating that the predictors collectively explained 35.2% of the variance in teachers' technostress. The remaining 64.8% was not explained by the two predictors included in the model. The findings indicate that teachers' technostress is associated with both individual technological capabilities and work-related demands when considered within a predictive model. Yang et al. (2025) identified technological factors, workplace conditions, and personal perceptions as major sources of teacher technostress. The present findings support the relevance of examining individual competence alongside organizational demands when investigating technology-related occupational strain.

3.3.2 Workload as a Significant Predictor of Technostress

Workload emerged as the only statistically significant individual predictor of technostress, with B = .548, SE = .064, β = .540, t(216) = 8.62, and p < .001. The positive regression coefficient indicates that higher workload was associated with higher technostress after controlling for ICT competence. Workload also demonstrated a substantially stronger standardized coefficient than ICT competence, indicating its greater contribution to the predictive model. The findings are consistent with the Job Demands–Resources framework, which explains how sustained work demands consume employees' physical and psychological resources. Pondang (2026) similarly identified techno-overload, techno-invasion, and techno-complexity as sources of technology-related strain among Philippine teachers. Salmela-Aro et al. (2019) identified associations between teachers' workload demands, burnout, and work engagement. Signo et al. (2025) emphasized the relevance of workload management and technostress coping strategies among basic education teachers. Collectively, these findings highlight the importance of managing technology-related responsibilities and time demands rather than relying exclusively on ICT skills development.

3.3.3 ICT Competence as a Non-Significant Individual Predictor of Technostress

ICT competence did not significantly predict technostress after controlling for workload, with B = .106, SE = .067, β = .098, t(216) = 1.57, and p = .118. Although the regression coefficient was positive, the result did not reach the .05 significance level. Thus, ICT competence did not demonstrate a statistically significant unique contribution to technostress within the regression model. The findings indicate that technological proficiency alone may not sufficiently explain teachers' experiences of technostress when workload is considered. Teachers may possess adequate ICT skills while continuing to experience pressure from digital reporting, communication requirements, and overlapping responsibilities. Vermila and Kurniawati (2025) similarly identified excessive digital workloads, technology complexity, work-life imbalance, and inadequate institutional support as contributors to educator technostress. These findings suggest that ICT competence development and workload management address related but distinct aspects of technology-related occupational strain.

3.3.4 Relative Contributions of ICT Competence and Workload

The standardized regression coefficients showed that workload (β = .540) contributed more strongly to predicting technostress than ICT competence (β = .098). Workload was statistically significant, whereas ICT competence was not. This indicates that differences in teachers' workload were more strongly associated with technostress than differences in their ICT competence within the specified model. The findings emphasize the relevance of organizational working conditions in understanding technostress. Yang et al. (2025) highlighted workplace demands and organizational support as important considerations in managing technology-related stress. The present results indicate that interventions focused on workload rationalization, technical support, and manageable digital responsibilities may be particularly relevant, while ICT competence development remains important for effective technology integration.

3.4 Implications for ICT Competence Development and Technostress Management

3.4.1 Priority Areas for Workload Rationalization and ICT Support

The findings revealed moderate ICT competence (M = 3.01), workload (M = 2.77), and technostress (M = 2.69). Pedagogical ICT skills obtained the lowest competence mean (2.92), time pressure was the highest workload dimension (2.95), and techno-invasion was the highest technostress dimension (2.98). Regression analysis further identified workload as the only significant individual predictor of technostress (β = .540, p < .001). These findings provide an empirical basis for the proposed action plan emphasizing workload rationalization, job-embedded ICT capability development, accessible technical support, and protection of work-life boundaries. The priority areas reflect the observed importance of time pressure and technology-related responsibilities. Rather than focusing solely on digital proficiency, the proposed intervention addresses the organization, timing, and management of teachers' professional tasks.

3.4.2 Institutional Support and Sustainable Technology Integration

The results indicated that teachers possessed functional ICT capabilities but experienced continuing pressure from overlapping instructional, administrative, and technology-related responsibilities. The significant contribution of workload to technostress suggests that technology-related occupational strain is closely associated with the demands placed on teachers. Differences across age, position, and ICT training exposure further indicate that teachers do not experience these demands uniformly. The findings support the proposed involvement of the Schools Division Office, district supervisors, school heads, ICT coordinators, and teachers in reviewing workload distribution and strengthening technical assistance. Needs-based Learning Action Cell sessions, peer coaching, practical ICT training, and periodic monitoring of workload and technostress are identified in the manuscript as possible interventions. These measures are intended to support effective ICT integration while promoting manageable professional responsibilities and teacher well-being.

4. Conclusion & Recommendations

The study concludes that the 219 public elementary school teachers in Ubay I, Ubay II, and Ubay III Districts, Bohol, during School Year 2026–2027 demonstrated moderate levels of ICT competence, workload, and technostress. Although teachers possessed functional technical skills and ICT self-efficacy, pedagogical ICT integration remained comparatively less developed. Time pressure emerged as the most prominent workload concern, while techno-invasion represented the greatest source of technology-related strain, indicating difficulties in maintaining boundaries between professional and personal responsibilities. Significant differences in ICT competence, workload, and technostress were observed across selected demographic characteristics, particularly age and position. Regression analysis established that ICT competence and workload jointly explained 35.2% of the variance in technostress; however, workload was the only significant individual predictor. These findings indicate that managing work demands is particularly important in addressing teachers' technostress, alongside continued development of pedagogical ICT competence and institutional support.

The Department of Education, Schools Division Office, and school administrators should prioritize workload rationalization by reviewing teaching-related, administrative, and ICT-mediated responsibilities, eliminating duplicated reporting requirements, and establishing manageable schedules for digital tasks. School heads should conduct regular workload assessments to identify excessive time demands and strengthen reasonable communication practices that protect teachers' personal time. To address comparatively weaker pedagogical ICT skills, schools should provide needs-based Learning Action Cell sessions, peer mentoring, practical digital instruction workshops, and accessible technical assistance. Teachers should be encouraged to organize digital resources, use standardized reporting templates, prioritize responsibilities, and participate in professional learning communities. The proposed action plan should be implemented progressively, subject to institutional approval and available resources, with semester-based monitoring of workload, ICT competence, and technostress. Future researchers may examine organizational support, ICT infrastructure, digital leadership, and work-life boundaries to further explain teachers' technology-related experiences.

The study was limited to 219 public elementary school teachers from Ubay I, Ubay II, and Ubay III Districts during School Year 2026–2027, restricting the direct generalizability of findings to other educational settings. Its quantitative predictive-inferential design and structured questionnaire provided statistical evidence but did not establish causal relationships or explore teachers' experiences in depth. The regression model included only ICT competence and workload, leaving 64.8% of technostress variance unexplained. Unequal demographic group sizes also warrant caution when interpreting comparisons. Future studies may include broader populations, additional organizational and technological factors, and qualitative or longitudinal approaches to strengthen understanding of technostress.

5. Compliance with ethical standards

The study reports voluntary participation, distribution of informed consent forms, confidentiality, and administrative permission from the concerned education authorities. Participants were informed of their rights, and their identities and data were protected. Institutional ethics approval or exemption, confirmation of informed consent obtained from all 219 respondents, and the conflict-of-interest declaration require verification before publication.

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