



The language digiclash: Digital immigrants teaching digital natives in the Philippine context

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ABSTRACT

In education, the digital competence gap between the digital natives who learn technology use from early years and those digital immigrants who learn technology at a later stage has had a profound effect on the way teaching and learning is conducted. This phenomenology research examined the experiences of novice and experienced Filipino and English teachers referred as digital immigrants in using information and communication technology (ICT) tools in the virtual learning environment. The participants of this qualitative descriptive study were purposefully selected participants from a local school district in Bohol and a state university in Candijay, which is situated in the central Visayas, Philippines. Results revealed that digital immigrant teachers faced challenges such as poor internet connectivity, resistance to change, and gaps in ICT skills. These issues were exacerbated by the region's limited access to ICT resources, internet, and adequate ICT training programs. Teachers, however, adopted strategies like proactivity, seeking social support, and fostering peer relationships to cope with these challenges. The study highlights the need for a more integrated approach to ICT integration that includes skill development, infrastructure improvement, and a shift in mindset. It suggests that professional development, mentorship, and collaborative teaching strategies are essential for empowering digital immigrant teachers. Moreover, improved digital infrastructure, especially internet access, will be crucial in enabling teachers to completely adopt ICT in their language instruction during an era of rapid digital shift.

Keywords: coping strategies, digital competence, ICT challenges, technology integration, virtual learning

INTRODUCTION

The incorporation of information and communication technology (ICT) into the use of pedagogy is more dire than it is innovative. It presents real world challenges aimed at people like teachers who hardly encounter opportunities to use technology

on both a personal and career level (Akram et al. 2022; Msambwa et al. 2024). This is even truer for teachers who are considered digital immigrants (Bennett 2012; Kesharwani 2020). These teachers encounter particular hurdles attempting to reconcile the chasm between outdated technological proficiency and the increasing technological educational landscape where



the role of ICT is ever growing. This generational divide is especially noticeable in classrooms where digital natives, students raised with technology are taught by educators who struggle to use these tools effectively (Prensky 2001; Tran et al. 2020; Elaoufy 2023). As indicated, the strangeness of the new technology is not only between the immigrants and the natives in relation to teaching but is a challenge to teaching, to student learning, to engagement, and to student achievements (Köse 2024). This issue has given rise to the concept of digiclash. The word digiclash came into existence due to a linguistic process of combining two words to form a new word called blending (Gao 2023). Digiclash describes the ongoing tension between digital immigrant teachers and their digital native students as they navigate the use of technology in education. This digital clash is observed in the workplace, such as in areas where language teachers are situated, where different generations struggle to align their expectations associated with digital transformation. The changes in the educational environment have created a range of dilemmas for teachers who were forced to move to remote instruction on short notice and without adequate training on how to employ technology to assist learning (Estigoy 2021). The integration of ICT in the classrooms has also created blended learning opportunities which makes teaching and learning of a language very important.

Furthermore, the absence of some forms of technology integration into the classroom has been associated with hindering pedagogy and student involvement; as such, the barriers teachers experience with concerning the use of ICT tools should be more expedient factors (Pérez-López and Ibarrondo-Dávila 2020). This highlights the importance of studies about the problems caused by the integration of ICT, especially for digital immigrant language teachers who usually feel less confident in the use of these devices and resources than digital native students.

Worldwide, both competence and exposure to ICT are necessary for educators who strive for successful integration of ICT in their teaching (UNESCO 2023). This is aligned with the United Nations' Sustainable Developmental Goal 4 which seeks to highlight the role of technology in improving the quality of education of people across the world society (Haleem et al. 2022; Varriale et al. 2024). In the field of language learning, ICT integration represents one of the major developments that can revolutionize the effectiveness of knowledge transfer. Although the potential for ICT to revolutionize education is well-understood, many digital immigrant teachers find it challenging to know how to best exploit these technologies (Guo et al. 2008; Raman and Yamat 2014; Basilotta-Gómez-Pablos et al. 2022). With a low ICT background, these teachers are not in position to use ICT for effective teaching and learning, hence weakening the quality of education at a time

when there is ICT revolution (Asare et al. 2023). This highlights the need for specialized forms of support and continued professional development in order to assist digital immigrant teachers to reduce the digital competence divide and improve the teachers' use of ICT in language teaching.

It has been widely established in the literature that in order to achieve successful ICT integration, a solid digital infrastructure alone is not sufficient, and a coherent professional development policy that increases teachers' ICT competence and motivation must also be in place (Senkivska 2022; Obidovna and Rustambekovich 2024). The likelihood of successful and positive classroom learning is contingent upon a teacher's technology proficiency and expertise. This is an affirmation with earlier studies which suggest teachers need to receive adequate training to cope with different ICT issues (Amhag et al. 2019; Pratolo and Solikhati 2021; Koch and Fehlmann 2025).

In the Philippines, the use of ICT in education is complicated by infrastructure issues, particularly in remote areas. Many schools report slow internet connections, lack of digital tools, minimal opportunities for teacher training and professional development (Barrot et al. 2021; Malangen and Isorena 2022). Such challenges are heightened in rural, marginal regions like the Subcongressional district of Bohol, where physical seclusion and absence of regional support systems aggravate the digital chasm, hindering the integration of ICT. This highlights the need for research that would specifically focus on the problems associated with digital immigrant teachers in these areas and methods on increasing technology access and teacher readiness. These were exacerbated with the transition to online classes during the COVID-19 Pandemic. The transition was an uphill challenge for a lot of teachers, particularly in remote areas, in the context of deficient infrastructure and a lack of adequate ICT training and other rules (Joaquin et al. 2020; Selvaraj et al. 2021; Kaur 2023). The shift to virtual learning has revealed underlying systemic problems in the education system, particularly in underserved communities, and just how much is at stake in solving the problems of ICT access and teacher preparation.

Despite having multiple studies analyzing the integration of ICT in education, most of the literature has been centered around urban educators as topics of focus (Ghavifekr and Rosdy 2015; Shah 2022; Kennedy 2023). There remains, however, in the literature, a gap focused on the pedagogical difficulties of digital immigrant language teachers, particularly in rural and under-resourced regions, where there is a lack of infrastructure and the barriers to technology use are heightened. Moreover, while performing research on blended learning that included the virtual classrooms for language teaching and learning, the authors have noted difficulties on the part of language

teachers with the management of technology for the effective delivery of the lessons. This study aims to bridge that gap by investigating the specific difficulties encountered by rural digital immigrant language teachers, focusing on the integration of ICT in language teaching, and the barriers to its effective use coupled with the strategies to overcome them. This study sought to derive conclusions from the experiences of the teachers and contribute to the needed canvass from which professional development training and policy proposals of language teachers in rural and disadvantaged areas can be addressed. The main goal was to help digital immigrant teachers enhance their digital skills, bridge the digital separation, and boost their ability to meet the needs of today's technology savvy students.

METHODS

Research Design

This paper uses a phenomenology study design. The approach applied to record true and rich narratives of participants while letting the phenomena articulate themselves. This enables the researcher to gain a more nuanced understanding of the participants' coping strategies and helps shed light on what the language teachers encounter while grappling with the integration of technology in their pedagogy and speaking more of the focal points of language teachers' lived experiences and did not extend beyond the situation under study.

Research Participants and Sampling Procedures

The respondents in this study were the Filipino teachers (n = 6) and English teachers (n = 6) who were digital immigrants from State University in Candijay and Candijay, Anda, Mabini, Alicia, Guindulman (CAMAG) schools under the Subcongressional district of Bohol. All participants used virtual learning as their main method of instruction. They were categorized into two groups: six novice teachers (with three years or less teaching experience) and six experienced teachers (with four years or more teaching experience).

The decision to include novice and experienced language teachers was prompted by a desire to study how different stages of teaching experience affect the problems and coping methods related to ICT integration. This variety permits a fuller understanding of the phenomenon, whereby several perspectives can be considered while concentrating on the common issues of digital competence (Alhazmi and Kaufmann 2022; Kreuder et al. 2024). According to Creswell (2013), evaluating diverse viewpoints enriches our understanding of lived experiences, and grouping participants by experience level is valid as long as they share the fundamental experience under research.

Purposive sampling was used to select participants who could provide rich data to help understand the research problem and central phenomenon of the study (Teddlie and Yu 2007). Using this sampling technique, the participants were selected based on the following criteria: (1) must have taught Filipino or English subjects, (2) must have low or average digital competence, and (3) must use digital learning as an alternative mode of delivery in teaching. A simplified questionnaire based on the UNESCO DigCompEdu Model was used to assess the participants' level of digital competence, which addressed the second inclusion criterion.

Data Collection

The researchers utilized focus groups and interviews to gather the needed information. The researchers developed interview guide questions that represented the focus areas, which looked at teachers' experiences, challenges, and strategies for integrating ICT into virtual language instruction. Key questions included: "Can you describe your experiences using ICT in your teaching?" "In what ways do you use digital tools in your teaching?" and "What challenges do you face when integrating technology into your teaching and how did you overcome them?" The interview questions used in the study were further reviewed by the expert in terms of the clarity, relevance, and alignment of the study's objectives in appropriately addressing the questions asked to the teachers in order to have elaborate responses. Additionally, the guide had undergone trial interview with a group of respondents similar to, but not identical to, the actual study participants. This trial allowed the researchers to refine the questions, ensuring they were clear, unbiased, and effective in capturing meaningful and reliable data. Upon identifying participants, each received a letter requesting permission to conduct interviews. After the participant's consent is acquired, the researchers started the interview, explained the purpose, duration of the study, and the use of interview data. In a qualitative approach, it is important to build trust and openness with participants, and by using this method, it important that participants are willing to undergo an interview (Colaizzi 1978; Creswell 2013).

Subsequently, the in-depth interview took between 45 to 60 minutes. After completing interviews with all of the participants, a focus group discussion (FGD) among colleagues who were experienced in qualitative research was held to validate results. The FGDs lasted 60-90 minutes and had one for each participant, preferably within the same week after the one-on-one interview to refresh the collective discussions. Two fellow workers were requested to participate in the FGDs to make sure that the participants come from the same teaching context and share the same experience. This was to verify the data collected, minimize interview data bias and enhance credibility of the findings.

The involvement of colleagues in the FGD corresponds to the process of peer validation or peer debriefing in qualitative research, which serves to enhance the credibility or trustworthiness of the findings (McLeod 2024). Peers who understand the participants' backgrounds and contexts add supportive or contradictory information to what is found in individual research interviews. As Vivek et al. (2023) point out, data triangulation, which in the present paper involved data and dissenting evidence cross-checking in the focus group discussion, enhanced the credibility and reliability of the study. This process protects the meaning derived from the interviews, in this case the interpretation, from being overly influenced by the researcher's understanding of the phenomenon.

In spite of all of this, inclusion of people associated closely with the participant requires some degree of attention. On the one hand, this introduces some bias relating to the personal ties involved, but on the other hand, it assists in the gaining of insights into the participant's real-world context. Nyumba et al. (2018) illustrates the importance of balancing closeness and familiarity with participants in order to corroborate the data with an unbiased approach, which is commendable. The fact that some colleagues in the FGDs are qualified in qualitative research means that there is not only triangulation but there is also improvement in the discussions and interpretations of the topics in the FGDs (Peters 2022). Gaining direct knowledge after assuming this role and their unique perspective will deepen and broaden the understanding pertaining to the challenges and experiences that the participants encounter. Including these two colleagues addresses potential bias within the exploratory framing of the study because having multiple perspectives can mitigate both researcher and participant biases (Natow 2019). This approach aimed to triangulate data and reinforce the trustworthiness of the conclusions through combining individual interviews with FGDs.

Initially the interviews were crafted in the English language, and the group discussions were held in Filipino, so that the respondents could comprehend what was being asked and could understand. The advantages of having the documents in both English and the native language for the project also include much better clarity and comprehension because of elimination of possible language barriers. In addition, face to face interviews and FGDs as well as the virtual prospects were conducted on google meet with all the safety protocols.

All recordings were transcribed and individually checked to give an accurate target for the phase that would be next in the research. The gained pieces of information through the interviews were all integrated into and analyzed through the systematic framework of Colaizzi (1978) which is known for its rigorous and in depth examination of qualitative studies. Colaizzi's method in this case is on known and

consists of 7 steps which all were used in this case study.

Data Analysis

With reference to the steps proposed by Colaizzi (1978) as applied by Morrow et al. (2015), the analysis proceeded to the seventh stage. Analysis of the verbatim transcripts from all of the participants. In the first stage, the transcripts of every participant were systematically analyzed. In the second stage, the analysis turned to the identification of the salient expressions and statements and the extraction of meaning that summarized the phenomenon under study. In the third stage, the vital phrases were organized into clusters of the essences. This was built upon to ascertain focal phenomena as profound in the fourth stage, amplifying the researchers understanding of the phenomenon by revealing synergies in the data through interconnections and associations structured by the themes as detailed. In this cluster, the researchers stretched the meaning of the themes, thus, synthesizing, defined in the fifth step in phenomenological analysis, to advance the meaning of the phenomenon to derive the sophisticated account of the participants' lived experiences.

The structures and emergent themes were verified through member checking in the sixth step. Once the analysis was completed, the researchers involved the participants in a member checking activity, per Guba and Lincoln (1994). After the themes were verified, the researchers conducted thematic cross validation, which included several follow-up FGDs and included colleagues who are seasoned qualitative researchers, which helped to check and validate the synthesized descriptions and the emergent themes identified. Qassimi (2023) states that cross validation increases qualitative research credibility and rigor through the use of different perspectives in finding verification. These colleagues were important as they had a personal relationship with the participants and qualitative research expertise, adding another dimension to the precise findings of the research. The synthesized descriptions, emerging themes, and findings were then taken to the participants' colleagues in the FGDs. The participants were asked to consider the narratives that represented the focus group's lived experiences. Reflections were also solicited regarding the fit of the descriptions with what they understood concerning the participants' perceptions as well as the correspondence of the themes they were identifying with the essences of the lived experiences of the participants. The validation of the descriptions occurred in several iterations of discourse, having peers pose clarifying queries, recommend alterations, or furnish contextual expansion. Ensuring the co-participant validation of the interpretations, the collaborative peer-review cycle offered sufficient opportunity to ascertain that the

interpretations were aligned with the participants' perspectives.

Any time the researchers identified inconsistencies or mistakes concerning particular themes, a recourse to the data was pursued as a first step to a remedy. They revisited the transcripts again to determine if the themes that were confirmed align with the participants' lived experiences. In some cases, it was the specialists themselves who revised these themes. In light of colleagues or informal networks, the constructed or modified themes would be thoroughly refined. It seemed as if there was a cycle, the analysis corresponding to the participants' opinions to a remarkable extent, which helped to authenticate the findings.

Finally, the researchers in the seventh step confirmed the themes after member-check validation as requiring no further changes. This final validation step, corroborated with the participants' feedback, attested to the fact that the meanings and themes were authentic and represented the participants' true lived experiences. This final step confirmed that all seven criteria of Colaizzi's other approach to rigorous and reliable analysis of the data were fulfilled.

RESULTS

Emergent Themes on the Challenges and Coping Strategies of Digital Immigrant Teachers

After several re-readings of the transcripts and extensive data analysis, three (3) themes of challenges emerged from data collected among

experienced teachers, while two (2) themes captured the lived experiences of the novice digital immigrant teachers. Table 1 depicts the process of identifying the emerging challenges faced by novice and experienced teachers.

Challenges with Internet Connectivity

Both novice and experienced digital immigrant teachers faced significant challenges due to unstable internet connections, which hindered their ability to integrate ICT tools into virtual classrooms. Teachers in rural areas reported that internet communication and lesson delivery were difficult due to frequent disconnections and signal strength problems.

As shared by one of the experienced English language teachers with over 15 years of teaching experience (P2-E), "... *Kasagaran gayud nga problema ang internet dinhi sa amo. Lisod kaayo ko ug paabot asa makakaplag ug maayo nga signal.* (I always find it difficult to access the internet from our place. It will take me a long time to decide where to find a strong signal.)

Moreover, a similar situation was experienced by a novice Filipino language teacher (P1-N) with 1 year of teaching experience, who shared: "...*dili stable nga internet connection ma'am. Usa jud na sa problema. Pagka-way ayo internet diria. Kanusa pa kaha ni magtinundo.*" (The internet connection is not stable. It is one of the problems here of having extremely slow internet connection. I do not know when it is going right.)

Table 1. Emerging challenges of the novice and experienced teachers

Formulated Meanings	Theme Clusters	Emergent Themes
Experienced Teachers (Four or more years of teaching experience)		
<ul style="list-style-type: none"> The participants encountered poor internet service quality, which directly affected their ICT integration. 	Having poor and intermittent internet connection	Challenges with Internet Connectivity
<ul style="list-style-type: none"> The participants associate their difficulties in integrating ICT tools with language competency due to their lack of digital knowledge and skills. 	Having limited knowledge and skills in ICT and language curriculum integration.	Digital Skills and Knowledge Limitations
<ul style="list-style-type: none"> The participants think that they are too old to adapt to new language teaching styles and that ICT integration is for young teachers only. 	Negative perceptions of ICT integration	Reluctance to Change
Novice Teachers (Three or less years of teaching experience)		
<ul style="list-style-type: none"> The participants experienced intermittent internet connection which limit their use of ICT 	Having intermittent internet connection	Challenges with Internet Connectivity
<ul style="list-style-type: none"> The participants are hesitant to use ICT because of their limited knowledge to technology. The participants lack the necessary skills and knowledge to use ICT tools. 	Having limited knowledge and skills in ICT and language curriculum integration.	Digital Skills and Knowledge Limitations

The responses revealed a growing reliance on technology among digital immigrant language teachers in rural underserved areas. They also indicated that inadequate digital infrastructure limited teachers' ability to sustain productive virtual classroom activities, which consequently reduced instructional efficiency.

Digital Skills and Knowledge Limitations

Both novice and experienced educators reported that their limited ICT knowledge and skills impacted their confidence and ability to integrate technology into instruction. Many sought support from family members or colleagues. This lack of proficiency led to hesitation in incorporating activities into virtual learning environments. Both groups recognized the need for enhanced ICT training to improve their digital skills and pedagogical approaches. The current results emphasized the importance of intergenerational support to overcome digital skills gaps, as well as the ways in which teachers respond to technology problems in the absence of institutional training. It also highlights the pressing need for digital immigrant language teachers to receive formal training, particularly in under-resourced contexts where these are overwhelmingly scarce.

According to the 58-year-old experienced Filipino language teacher (P1-E) with nearly 30 years of teaching experience, "...*dili gayud ko kamao ana inday. Magpatabang pa lagi ko sa akong anak ug mugamit ko. Kanang magbutang ug files ug mga activities sa messenger unya ipada. Kapila nako gitudloan, di man gihapon ko makamao ug ako-ako ra. Wala pod mi tarong training about ani.*" (I am not sure Miss. My children helped me whenever I used it, such as putting and sending files in the messenger; they taught me many times, but I still did not know how to do it on my own; we did not have enough training on this.)

Similarly, a 34-year-old novice Filipino language teacher (P4-N) with one year of teaching experience expressed the same problem. "*Kay limitado pa akong hibaw-an niini, kinahanglan ko pa magtuon unsaon kay magduha-duha pa man ko labi na sa akong mga activities oy. Magpangutana pa ko unsaon pagbuhat niini. Pero kon hatagan mi ug training unsaon pag-integrate ani nga mga ICT tools, makasabot ra gayud ko unsaon ni.*" (Because I have limited knowledge about it, I still have doubts about its uses, especially when I integrate the activities; I need to ask for help on what to do, but if we are given enough training on how to integrate these ICT tools, I will learn about it without a doubt.)

The findings showed that digital immigrant language teachers expressed a need for professional development tailored to their specific technological and instructional needs. The responses also indicated that training programs providing practical and relevant digital knowledge would be beneficial for their

professional growth.

Reluctance to Change

The reluctance of older teachers, termed as digital immigrants, to adapt to modern technology, was explained as a consequence of their advancing age and impending retirement. They suggested that younger teachers are better-suited for incorporating technology. On the contrary, beginner teachers demonstrated a greater propensity for employing ICT, albeit experiencing significant barriers related to inadequate digital competencies and unstable internet connectivity. Their attitude regarding the role of ICT in modern education is a precursor for transformation and learning. This research found a marked intergenerational divide; experienced teachers tended to show resistance to the integration of ICTs citing reasons related to ageing while novice teachers, also faced with similar constraints of technology, showed a readiness and a passion to use digital features. From this angle of ICT teacher adoption, it provides a profound understanding on how teacher's age and career stage impact the propensity of teachers to adopt new technologies. These findings prompt government agencies such as the Department of Education to provide aid or language assistant to the experienced teachers in incorporating ICT.

The experienced Filipino language teacher (P1-E), with nearly 30 years of teaching experience, expressed frustration, saying: "...*Kapoy na gayud kaayo, Inday. Hapit na ko mo retire. Nagsakit na akong mata, dili na nako klaro ang mga gagmay nga letra sa computer. Mas angay na lang gyud sa inyo mga batan-on. Kami mga tigulang na, dili na kinahanglan mag-apil-apil ana. Kanang mobiyahe pa ug lagyo kay mangita ug signal, sometimes mosaka pa ug buntod to get internet connection.*" (It is already tiring for me, Miss; I am almost to retire, and I cannot even see those small letters on the computer; that is only good for the young, like you; those of us who are older, like me, should never be involved in that. Such long travel to find strong internet connection. Sometimes, climbing mountains to get internet connection.)

Meanwhile, the experienced English language teacher with 28 years of experience (P4-E) also commented: "...*maolagi langga, taas na ang lubi. Dili nako kugihon. Kamong mga batan-on, sayon ra na ninyo. Mga haniti naman mo ana kami maopay ituon namo. Hingalimtanon na pod samot, maglisud tawon ko lang.*" (That's it, dear, the coconut tree is fully grown (idiomatic expression meaning – I am too old to begin). It does not appeal to me. Because you are young, it is simple for you to do. It is extremely difficult for us, who already have a short memory and are just beginning to learn.)

The findings showed that older, more experienced teachers exhibited resistance to change due to age-related perceptions, while younger teachers

demonstrated greater openness to adopting new methods. The results also revealed a significant relationship between teachers' career stages and their use of digital tools.

While digital immigrant language teachers encountered challenges in integrating ICT into their

instruction, they also demonstrated the ability to manage these difficulties by employing various coping strategies. Table 2 depicts the process of identifying the emerging coping strategies employed by novice and experienced teachers.

Table 2. Emerging coping strategies of the novice and experienced teachers.

Formulated Meanings	Theme Clusters	Emergent Coping Strategies
Experienced Teachers (Four or more years of teaching experience)		
<ul style="list-style-type: none"> The participants took the initiative to find locations with stronger signals to upload digital modules or attend virtual classes. They sometimes traveled to areas with better connectivity to ensure their responsibilities were met. 	Searching locations with stable connections	Initiating Proactive Measures
<ul style="list-style-type: none"> The participants relied on colleagues or family members, including their children, for assistance with ICT-related tasks. 	Seeking help from social networks	Social Assistance
<ul style="list-style-type: none"> The participants viewed ICT integration as part of their professional duties and pushed themselves to meet work requirements, despite hesitations or initial resistance. 	Accepting ICT utilization as a job responsibility	Work Compliance
Novice Teachers (Three or less years of teaching experience)		
<ul style="list-style-type: none"> The participants look for locations with stronger internet signals to ensure they could upload teaching materials or participate in virtual classes. 	Searching locations with stable connection	Initiating Proactive Measures
<ul style="list-style-type: none"> The participants relied on colleagues, family members, or community members to assist them with ICT-related challenges. 	Seeking help from social networks	Social Assistance

Initiating proactive measures. To cope the challenges with internet connectivity, both novice and experienced language teachers took the initiative to find locations with stable signals. This sometimes involved traveling to areas with better connectivity to ensure they could upload and share digital modules or participate in virtual classes. This coping strategy is described by both novice and experienced digital immigrant teachers in the following excerpts.

The 43-year-old experienced English language teacher with over 15 years of teaching experience (P2-E) mentioned: "...*mangita pa lagi ko ug asa'y kusog nga signal aron ra masend tong akong digital modules sa mga bata.*" (I needed to find a location with a strong internet connection so that I could send my digital modules to my students.)

Similarly, a 23-year-old novice Filipino language teacher with almost two years of teaching experience (P3-N) expressed: "...*muadto pa ko sa centro kay kusog man signal adto.*" (I had to go to our town center because the internet connection is good there.)

Social Assistance. Due to digital skills and knowledge limitations, both groups sought help from others, including colleagues, children, and community

members. This social assistance helped them handled the challenges of using technology in their teaching. Teachers often relied on others to guide them through technical tasks or troubleshoot problems. These statements exemplified how teachers approached this challenge.

As the 58-year-old experienced Filipino language teacher (P1-E) revealed: "...*magpatudlo ko inday, naa si Sir (kauban sa trabaho) sige nako samukon. Maayo man siya ana.*" (I let others teach me Miss, (mentioning a colleague's name) I was always bothering him. He is very good at it.)

Comparably, the 42-year-old experienced English language teacher (P4-E) also shared: "...*naa akong mga anak lang maoy akong tig-tudlo. Sigihan nako sila ug pangutana ug di ko kasabot sila akong sugoon.*" (I enlist my children's assistance, and I let them do the work if I do not understand.)

Work Compliance. Experienced digital immigrant teachers, especially those reluctant to change, coped by viewing ICT integration as part of their job responsibility. Despite their hesitations, they pushed themselves to meet work requirements, acknowledging that technology is an unavoidable aspect of modern teaching.

As commented by the experienced Filipino language teacher (P1-E) with nearly 30 years of teaching experience: “...*mapugos nalang jod ko ug antos ani kay mao naman jud ni atong trabaho inday.*” (I have no choice but to force myself to use ICT; it is already part of our job, Miss.)

DISCUSSION

Challenges with Internet Connectivity

Both novice and experienced digital immigrant teachers teaching in virtual learning environments face challenges due to unstable internet access, impacting their ICT integration and teaching practices. This coincides with Teräs (2022) findings which points out a global issue of inadequate internet connectivity in rural areas. The poor and intermittent internet connections deter experienced digital immigrant teachers from optimizing the use of ICT tools, unfavorably affecting the educational process. Improving digital infrastructure is crucial for teachers to integrate ICT fully into their language teaching instruction.

For experienced teachers, the situation is even worse as they are less confident with technology, intermittent internet further amplifies their reluctance. As stated by Gómez-Fernández and Mediavilla (2022) the ability to connect to the internet has an impact on an instructor’s propensity to utilize ICT. Having poor connectivity, teachers do not wish to integrate technology into their instructions because of the likelihood of disruptions due to the technology. This, however, is a challenge that posits some degree of concern. As a result, schools should be partnered with top tier internet providers to improve internet access in the far-flung regions of the country so that teachers concentrate on the real work of teaching. This is an issue that the government and the relevant education authorities need to prioritize with respect to the digital infrastructure gap, specifically the geographical digital divides in the country, and the particular ramifications of this on the teaching of the English language in underserved areas.

Digital Skills and Knowledge Limitations

Inefficient understanding and application of pedagogy ICT integration stands as another predominant obstacle for both novice and experienced educators. For example, many do not know how to embed the language macro skills into digital platforms. Basargekar and Singhavi (2017) found that a lack of ICT knowledge and expertise is seen by instructors as a major hindrance to ICT application. In this study, both novice and experienced teachers recognized that with limited skills it was difficult to learn and use ICT well. This suggests the demand for crafting professional development programs to improve the technical skills and to instill technology adaptability to

the digital immigrant educators.

Hennessy et al. (2022) argued that simply providing ICT equipment is no good for teachers if they have no skill in using it effectively. Experienced teachers, in particular, may struggle to shift away from traditional methods, for they may believe that they are not qualified to operate efficiently in a digital environment. On the contrary, novice teachers, while still lacking proficiency, are more motivated to learn. However, they both perceive that the appropriate training on ICT will help improve their competence and confidence in using ICT tools. Schools should provide continuous pedagogical ICT training as well as the development of mentoring and peer support systems to enable knowledge sharing and address the digital divide (Sapad and Caballes 2022). This underscores the necessity of constructing professional development modules that tailor to the needs of the digital immigrant language teachers. With these, useful knowledge is provided in developing training programs that suit the needs of such language teachers.

Reluctance to Change

Change is always met with reluctance, and in the case of educators’ resistance is often the highest among the most experienced. A considerable number of these educators view the adoption of any new ICT tool or technique as an attempt to re-learn something, thus perceiving themselves as “too old” or even “set” as they subscribe to the belief that the old ways suffice. The ICT in the classroom practice is influenced in a complex way, as Seifu and Wang (2020) has explained in relation to the attitude or disposition of a teacher towards integrating technology. This reluctance towards change among the more seasoned teachers is rooted in a psychological state of fear and uneasiness towards unfamiliar tools. These observations on ICT integration work provide valid clues to changes in teachers’ dispositions. Most teachers reveal ICT access and use barriers, suggesting the need for targeted professional development. Such integration-focused initiatives strengthen the collaboration of the ICT resources.

Conriquez (2020) underscored the importance to know teachers’ orientations toward change as their beliefs impact the way they practice in the classroom. Similarly, Dogan et al. (2021), emphasized that the extent to which technology can be successfully integrated depends significantly on teachers’ attitudes toward the technologies. Teachers’ resistance to change may have the effect of slowing the adoption of technology and affect successful ICT integration into schools (Hamlouli 2021). Contrarily, novice teachers are more willing to utilize technology albeit that they are hindered by challenges such as lack of skill and connectivity issues. Novice teachers have been reported to be more open to technology for teaching and are more likely to consider technology as an essential for modern teaching (Bice and Tang

2022). This willingness to adopt ICT, even with difficulties, reflects the generation gap amongst teachers when it comes to technology in education, highlighting the need for differentiated strategies to assist digital immigrant teachers at all levels of experience.

In overcoming the persistent challenges associated with the use and integration of digital pedagogies into their curriculum, all educators, irrespective of their digital teaching proficiency face hurdles. This type of situation epitomizes the advancement that educators have made with the paradigm of digital pedagogy, and thus, policy frameworks and support programs should plan integration strategies for technology by considering age and career milestones. In the case of language teachers who are digital immigrants, the ability to systematically use ICT is associated with hurdles of pedagogical ICT usage. This focuses on the ability to overcome ICT usage attitudinal barriers and encourage effective teaching of the complex dynamics of the language system.

Coping Strategies

Initiating proactive measures. Even in the face of multifaceted challenges, both novice and advanced digital immigrant educators have undergone transformative changes in their thinking and behavior concerning the adoption of coping strategies to ICT integration. Seeking improved internet connection and or access is one of the strategies employed. Teachers often relocate to zones within weaker distance to the access point, underscoring their efforts to ensure that their students receive ICT integration material regardless of the distance they have to travel. This is consistent with Munna and Kalam (2021), who noted that teachers enthusiastically combined old and new methods to cope with the challenges ICT integration posed, underscoring their commitment to offering challenges. The immeasurable perseverance and adaptability of teachers, who are classified as digital immigrants, immensely assist the promotion of integrating ICT into the instructional methods and improving the teaching and learning process. These initiatives reflect how language teachers handle such problem on internet connectivity, through proactively seeking out solutions to fulfill their virtual teaching responsibilities.

Social Assistance. Moreover, both teachers indicated the need of social support in order to deal with their inadequacies in ICT skills. Most seek assistance from friends, family, or anyone they perceive to be more tech-savvy. These individuals are willing to help them overcome feelings of low self-esteem and limited ICT skills to access and use digital technologies. This assistance and encouragement from more knowledgeable peers facilitate the use of the Internet with low self-esteem. This is more the case with novice teachers, as they are the ones who are more

inclined to adopt such practices. This is consistent with Li et al. (2019) who stated the importance of cooperation and networking support in the context of technology integration. Success in overcoming such challenges is, as Chellammal et al. (2023) points out, predicated on teachers' knowledge, skills and competencies. These findings suggest the need to encourage more formal peer support/mentoring as one approach to closing the digital divide and improving the ICT to productive ratio. Similarly, more collaboration and support networks to address the ICT challenges of remote teaching is what enables language educators to overcome the deficiencies in their digital skills and knowledge.

Work Compliance. An integral part of the profession is adaptability, finding the best creative solutions to challenges that arise. To experienced educators, discomfort with teaching technologies stems from trust in the benefits that thrive ICT facilitates in classrooms. Considering Tortola (2024), there may be a working assumption that seasoned educators are resilient with integrating varied problem-solving approaches harmonious to professional tasks. Advanced competence in teaching and learning requires cognitive and flexible ICT integration. Improving and teaching ICT requires a sustained effort to create a robust teaching workspace and to productively cope with teaching and learning, technology, and personal challenges. Discomfort and reluctance are the limiting variables in bottlenecks and ICT teaching integration. Hence, these interventionist strategies are essential to close teacher's gap in digital and linguistic ICT integration that is expected in 21st educational pedagogy.

By actively embracing these measures, teachers show remarkable resilience and dedication in overcoming the challenges posed by virtual teaching environments. Despite obstacles like limited digital literacy and unreliable internet connectivity, they remain focused on providing their students with a high-quality education.

In conclusion, the use of ICT in remote language teaching requires a balanced multi-faceted approach while understanding the nuances of skill sets, the development of ICT infrastructure, and the relational dynamics while supporting language teachers who are digital immigrants teaching digital natives students. Critical as ICT integration advances in all teaching practices are the facilitators' commitment and vision as they contribute to the phenomenon of digital immigrant educators across diverse educational settings globally. The data speak to the impact of professionally focused school-wide reform initiatives on developing educators' engagement and relational frameworks of adaptability, mentorship, and peer collaboration, which promote information flow and the reduction of the digital divide. The emphasis of the study once again strengthens the argument on the digital desert

phenomenon, particularly the lack of the internet and other digital teaching tools, which remain the most significant barriers to effective ICT-enabled language teaching in a digital society.

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GENERATIVE AI STATEMENT

In creating this work, the researchers utilized ChatGPT for the enhancement of statements and grammar checking. After using the tool/service, the author(s) carefully reviewed and edited the content as necessary and bear(s) full responsibility for the publication's content.

ETHICAL CONSIDERATIONS

The researchers submitted files to their local Research Ethics Committee for validation. After receiving local ethics certification, they informed participants of the strict confidentiality that would be observed throughout the study and asked for their consent to record the interview and focus group discussion sessions. In accordance with Bryman and Bell (2007), the following ten key ethical considerations were central to this study: 1) research participants should not be subjected to harm in any way; 2) respect for the dignity of participants should be prioritized; 3) full consent should be obtained from participants prior to the study; 4) the privacy of research participants must be protected; 5) adequate confidentiality of research data should be ensured; 6) Anonymity of individuals and organizations participating in the research must be maintained; 7) any deception or exaggeration about the aims and objectives of the research must be avoided; 8) affiliations, sources of funding, and potential conflicts of interest must be declared; 9) all communications related to the research must be conducted with honesty and transparency; and 10) it is essential to avoid presenting misleading information or skewing primary data findings in a biased manner.

DECLARATION OF COMPETING INTEREST

The authors declare that there are no competing interests to any authors.

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REFERENCES

- Akram H, Abdelrady AH, Al-Adwan AS, Ramzan M. 2022. Teachers' perceptions of technology integration in teaching-learning practices: A systematic review. *Frontiers in Psychology*. 13(1):920317. <https://doi.org/10.3389/fpsyg.2022.920317>
- Alhazmi AA, Kaufmann A. 2022. Phenomenological qualitative methods applied to the analysis of cross-cultural experience in novel educational social contexts. *Frontiers in Psychology*. 13(1):785134. <https://doi.org/10.3389/fpsyg.2022.785134>
- Amhag L, Hellström L, Stigmar M. 2019. Teacher educators' use of digital tools and needs for digital competence in higher education. *Journal of Digital Learning in Teacher Education*. 35(4):203–220. <https://doi.org/10.1080/21532974.2019.1646169>
- Asare S, Amidu A, Aning E, Ampomah T, Bediako YA, Amuaful E, Baah KB. 2023. Impact of integrating information technology in teaching English in College of Education: A systematic review. *American Journal of Education and Technology*. 2(3):76–82. <https://doi.org/10.54536/ajet.v2i3.1840>
- Barrot J, Llenares I, Rosario L. 2021. Students' online learning challenges during the pandemic and how they cope with them: The case of the Philippines. *Educational Information Technology*. 26:7321–7338. <https://doi.org/10.1007/s10639-021-10589-x>
- Basargekar P, Singhavi C. 2017. Factors affecting teachers' perceived proficiency in using ICT in the classroom. *International Academic Forum Journal of Education*. 5(2):67–84. <https://doi.org/10.22492/ije.5.2.03>
- Basilotta-Gómez-Pablos V, Matarranz M, Casado-Aranda LA, Otto A. 2022. Teachers' digital competencies in Higher Education: A systematic literature review. *International Journal of Educational Technology in Higher Education*. 19(8). <https://doi.org/10.1186/s41239-021-00312-8>
- Bennet S. 2012. Digital Natives. In: *Encyclopedia of Cyber Behavior*. IGI Global Scientific Publishing. p. 212-219. [accessed 2025 Oct 17] <https://doi.org/10.4018/978-1-4666-0315-8.ch018>
- Bice H, Tang H. 2022. Teachers' beliefs and practices of technology integration at a school for students with dyslexia: A mixed methods study. *Education and Information Technologies*. 27(7):10179-10205. <https://doi.org/10.1007/s10639-022-11044-1>
- Bryman A, Bell E, editors. 2007. *Business research methods*. Revised Edition) Oxford: Oxford University Press.
- Chellammal T, Bama KS, Krishnamoorthy R. 2023. Challenges faced by educators in adopting online technology. *World Review of Entrepreneurship, Management and Sustainable Development*. 19(1/2):71-80. <https://doi.org/10.1504/wremsd.2023.127244>
- Colaizzi PF. 1978. Psychological research as the phenomenologist views it. In: *Existential-phenomenological alternatives for psychology*. Oxford University Press. p. 6. [accessed 2025 Oct 8]

- Conriquez J. 2020. The Relationship Between Teacher Beliefs, Classroom Management, and Teacher-Student Relationships [Dissertation]. [San Bernardino]: California State University. [accessed 2025 Nov 20] <https://scholarworks.lib.csusb.edu/etd/1117>
- Creswell JW. 2013. Qualitative inquiry and research design: Choosing among five approaches. Third edition. United States of America. SAGE.
- Dogan S, Dogan NA, Celik I. 2021. Teachers' skills to integrate technology in education: Two path models explaining instructional and application software use. *Educational Information Technology*. 26:1311–1332. <https://doi.org/10.1007/s10639-020-10310-4>
- Elaoufy H. 2023. Bridging the gap between digital native students and digital immigrant professors: Reciprocal learning and current challenges. *American Journal of Education and Technology*. 2(2):23–33. <https://doi.org/10.54536/ajet.v2i2.1522>
- Estigoy E. 2021. Information and communication technology (ICT) readiness and its integration to teaching and learning process among private high schools. *Sage Advance*. <https://doi.org/10.31124/advance.13669814.v1>
- Gao Y. 2023. A lexicographical approach to neologisms created through blending. *Lexicography*. 10(2):161–172. <https://doi.org/10.1558/lexi.26356>
- Ghavifekr S, Rosdy WAW. 2015. Teaching and learning with technology: Effectiveness of ICT integration in schools. *International Journal of Research in Education and Science*. 1(2):175–191.
- Gómez-Fernández N, Mediavilla M. 2022. Factors influencing teachers' use of ICT in class: Evidence from a multilevel logistic model. *Mathematics*. 10(5):799. <https://doi.org/10.3390/math10050799>
- Guo RX, Dobson T, Petrina S. 2008. Digital natives, digital immigrants: An analysis of age and ICT competency in teacher education. *Journal of Educational Computing Research*. 38(3):235–254. <https://doi.org/10.2190/ec.38.3.a>
- Guba EG, Lincoln YS. 1994. Competing paradigms in qualitative research. In: *Handbook of qualitative research*. Sage Publications Inc. p. 105–117. [accessed 2025 Oct 12]
- Haleem A, Javaid M, Qadri MA, Suman R. 2022. Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*. 3:275–285. <https://doi.org/10.1016/j.susoc.2022.05.004>
- Hamlaoui S. 2021. Teachers' Resistance to Educational Change and Innovations in the Middle East and North Africa: A Case Study of Tunisian Universities. In: Ouaisa R, Pannewick F, Strohmaier A, editors. *Re-Configurations: Contextualising Transformation Processes and Lasting Crises in the Middle East and North Africa*. Wiesbaden: Springer Fachmedien. p. 171–184. [accessed 2025 Oct 6]. https://doi.org/10.1007/978-3-658-31160-5_11
- Hennessy S, D'Angelo S, McIntyre N, Koomar S, Kreimeia A, Cao L, Brughma M, Zubairi A. 2022. Technology use for teacher professional development in low- and middle-income countries: A systematic review. *Computers and Education Open*. 3:100080. <https://doi.org/10.1016/j.caeo.2022.100080>
- Joaquin JJ, Biana HT, Dacela MA. 2020. The Philippine higher education sector in the time of COVID-19. *Frontiers in Education*. 5:576371. <https://doi.org/10.3389/feduc.2020.576371>
- Kaur V. 2023. Covid - 19's effect on the school education system: Difficulties and opportunities for online teaching and learning. *International Journal of Science and Research*. 12(7):384–390. <https://doi.org/10.21275/sr23705171055>
- Kennedy GM. 2023. Challenges of ICT integration in teachers' education: A case study of the College of Education, University of Liberia. *International Journal of Social Science and Education Research Studies*. 3(5):860–870. <https://doi.org/10.55677/ijssers/v03i5y2023-15>
- Kesharwani A. 2020. Do (how) digital natives adopt a new technology differently than digital immigrants? A longitudinal study. *Information and Management*. 57(2):103170. <https://doi.org/10.1016/j.im.2019.103170>
- Koch C, Fehlmann F. 2025. Beyond digital literacy: Exploring factors affecting digital performance of university staff. *Media and Communication*. 13:8913. <https://doi.org/10.17645/mac.8913>
- Köse DB. 2024. https://aisel.aisnet.org/treos_amcis2024/17
- Kreuder A, Frick U, Rakoczy K, Schlittmeier SJ. 2024. Digital competence in adolescents and young adults: A critical analysis of concomitant variables, methodologies and intervention strategies. *Humanities and Social Sciences Communication*. 11(1):48. <https://doi.org/10.1057/s41599-023-02501-4>
- Li Y, Wang Q, Lei J. 2019. Exploring different needs of digital immigrant and native teachers for technology professional development in China. *International Journal of Technology in Teaching and Learning*. 15(1):32–48. <https://doi.org/10.37120/ijtl.2019.15.1.03>
- Malangen A. 2022. Information and communications technology (ICT) competency and capability of Sauyo High School teachers: A basis for ICT development plan. *Social Science Research Network*. [accessed 2025 Oct 6]. <https://doi.org/10.2139/ssrn.4183485>
- McLeod S. 2024. Credibility in qualitative research. *Simply Psychology*. [accessed 2024 Dec 13]. <https://www.simplypsychology.org/credibility-in-qualitative-research.html>
- Morrow R, Rodriguez A, King N. 2015. Colaizzi's descriptive phenomenological method. *The Psychologist*, 28(8):643–644. <https://doi.org/10.1016/j.jcin.2015.03.004>
- Msambwa MM, Daniel K, Lianyu C. 2024. Integration of information and communication technology in secondary education for better learning: A systematic literature review. *Social Sciences and Humanities Open*. 10:101203. <https://doi.org/10.1016/j.ssaho.2024.101203>
- Munna AS, Kalam MA. 2021. Teaching and learning process to enhance teaching effectiveness: a literature review. *International Journal of Humanities and Innovation*. 4(1):1–4. <https://doi.org/10.33750/ijhi.v4i1.102>
- Natow RS. 2019. The use of triangulation in qualitative studies employing elite interviews. *Qualitative Research*. 20(2):160–173. <https://doi.org/10.1177/1468794119830077>
- Nyumba T, Wilson K, Derrick CJ, Mukherjee N. 2018. The use of focus group discussion methodology: Insights from two decades of application in conservation. *Methods in Ecology and Evolution*. 9(1):20–32. <https://doi.org/10.1111/2041-210X.12860>
- Obidovna DZ, Rustambekovich AA. 2024. The role of digital technologies in language education: Tools, approaches, and implications. *American Journal of Philological Sciences*. 4(11):18–22. <https://doi.org/10.37547/ajps/volume04issue11-05>
- Pérez-López MC, Ibarrondo-Dávila MP. 2020. Key variables for academic performance in university accounting studies: A mediation model. *Innovations in Education and Teaching International*. 57(3):374–385. <https://doi.org/10.1080/14703297.2019.1620624>
- Peters U. 2022. What is the function of confirmation bias. *Erkenntnis*. 87(3):1351–1376. <https://doi.org/10.1007/s10670-020-00252-1>
- Pratolo BW, Solikhata HA. 2021. Investigating teachers' attitude toward digital literacy in EFL classroom. *Journal of Education and Learning*. 15(1): 97–103. <https://doi.org/10.11591/edulearn.v15i1.15747>
- Prensky M. 2001. Digital natives, digital immigrants part 2: Do they really think differently? *On the Horizon*. 9(6):1–6. <https://doi.org/10.1108/10748120110424843>
- Qassimi N. 2023. Research triangulation: Enhancing validity, rigor, and insight through multimethod approaches. <https://doi.org/10.5281/zenodo.10430483>
- Raman K, Yamat H. 2014. Barrier's teachers face in integrating ICT during English lessons: A case study." *The Malaysian Online Journal of Educational Technology*. 2(3):11–19.
- Sapad RP, Caballes DG. 2022. Initiation of a professional development program for science instructional leaders within the technological pedagogical content knowledge (TPACK)

- framework. *The Palawan Scientist*. 14(1):75-83. <https://doi.org/10.69721/TPS.J.2022.14.1.09>
- Seifu K, Wang S. 2020. Determinants of information and communication technology integration in the teaching-learning process at Aksum University. *Cogent Education*. 7(1):1824577. <https://doi.org/10.1080/2331186X.2020.1824577>
- Selvaraj A, Radhin VKAN, Ka N, Benson N, Mathew AJ. 2021. Effect of pandemic based online education on teaching and learning system. *International Journal of Educational Development*. 85(1):102444. <https://doi.org/10.1016/j.ijedudev.2021.102444>
- Senkivska L. 2022. The role of digital technologies in education. *Journal of Education, Health and Sport*. 12(1):419-423. <https://doi.org/10.12775/jehs.2022.12.01.036>
- Shah SS. 2022. Teaching and learning with technology: Effectiveness of ICT integration in schools. *Indonesian Journal of Educational Research and Technology*. 2(2):133-140. <https://doi.org/10.17509/ijert.v2i2.43554>
- Teddlie C, Yu F. 2007. Mixed methods sampling: A typology with examples. *Journal of Mixed Method Research*. 1(1):77-100. <https://doi.org/10.1177/2345678906292430>
- Teräs M. 2022. Neil Selwyn: Education and technology: Key issues and debates. *International Review of Education*. 68(1):635-636. <https://doi.org/10.1007/s11159-022-09971-9>
- Tortola R. 2024. Unveiling resilience: Exploring coping strategies among teachers in the department of education. *International Journal of Academic Multidisciplinary Research*. 8(6):530-546.
- Tran T, Ho MT, Pham TH, Nguyen MH, Nguyen KLP, Vuong TT, Nguyen THT, Nguyen TD, Nguyen TL, Khuc Q, and others. 2020. How digital natives learn and thrive in the digital age: Evidence from an emerging economy. *Sustainability*. 12(9):3819. <https://doi.org/10.3390/su12093819>
- UNESCO (United Nations Educational, Scientific, and Cultural Organization). 2023. Startling digital divides in distance learning emerge. [accessed 2024 Sep 18]. <https://www.unesco.org/en/articles/startling-digital-divides-distance-learning-emerge>
- Varriale V, Cammarano A, Michelino F, Caputo M. 2024. The role of digital technologies in production systems for achieving sustainable development goals. *Sustainable Production and Consumption*. 47(1):87-104. <https://doi.org/10.1016/j.spc.2024.03.035>
- Vivek R, Nanthagopan Y, Piriyaarshan S. 2023. Beyond methods: Theoretical underpinnings of triangulation in qualitative and multi-method studies. *South East European University Review*. 18(2):105-122. <https://doi.org/10.2478/seeur-2023-0088>

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