

LANGUAGE INTEGRATION AND INSTRUCTIONAL TECHNOLOGY IN ENGLISH LANGUAGE TEACHING: EFFECTS ON TEACHING EFFICACY AND DIGITAL LITERACY AMONG HEI FACULTY IN SULU

¹Yoko Iribani and ¹Nelson Julhamid

¹School of Graduate Studies, Sulu State University, Jolo, Sulu, Philippines
Corresponding Email: sscgspub@sulustatecollege.edu.ph

ABSTRACT

This study examined the effects of language integration and instructional technology on English language teaching efficacy and digital literacy among faculty in Higher Education Institutions (HEIs) in Sulu. A descriptive-correlational research design was employed, involving 200 English language faculty selected through purposive sampling. Data were collected using a structured questionnaire adapted from established frameworks on multilingual education, technology integration, teaching efficacy, and digital literacy. Statistical analyses included descriptive measures, t-tests, one-way ANOVA, and Pearson correlation. Results indicated that faculty demonstrated high levels of language integration, instructional technology use, teaching efficacy, and digital literacy. Differences across demographic variables were generally not significant; however, educational attainment and length of service significantly influenced language integration and instructional technology use, while length of service also affected teaching efficacy and digital literacy. Correlation analysis revealed strong and significant relationships among all variables, with instructional technology use showing a very high correlation with teaching efficacy. The findings highlight the interconnected roles of linguistic, technological, and pedagogical competencies in effective English language teaching and support integrated frameworks such as TPACK and Self-Efficacy Theory. The study recommends strengthened faculty development initiatives and further research across diverse contexts.

Keywords: Language integration; instructional technology; teaching efficacy; digital literacy; English language teaching

INTRODUCTION

The rapid transformation of 21st-century education has redefined the competencies required of language educators, particularly in multilingual and technology-mediated learning environments. As classrooms increasingly shift toward digitally enriched instruction, the integration of linguistic strategies and instructional technology has emerged as a critical determinant of effective teaching and learning. Language integration, which includes practices such as translanguaging, code-switching, and multilingual scaffolding, facilitates comprehension, supports cognitive development, and enhances cultural relevance—especially in linguistically diverse contexts such as Sulu, where learners draw from multiple language systems in constructing meaning (Baker, 2011; García, 2009; Cenoz & Gorter, 2020). Simultaneously, instructional technology expands pedagogical possibilities by enabling multimodal learning, interactive engagement, and access to authentic language resources, thereby transforming traditional English language teaching into a more dynamic and learner-centered process (Warschauer, 2011; Basar & Sahin, 2022).

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The intersection of language integration and instructional technology is theoretically grounded in sociocultural and constructivist perspectives, which posit that learning occurs through mediated interaction and meaningful engagement within social contexts. Language serves as a primary tool for cognition and communication, while digital technologies act as mediational means that facilitate collaboration, interaction, and knowledge construction (Vygotsky; Piaget, 1955). Within this paradigm, the Technological Pedagogical Content Knowledge (TPACK) framework provides a comprehensive lens for understanding how effective teaching emerges from the alignment of content knowledge, pedagogical strategies, and technological competence (Mishra & Koehler, 2006). Moreover, Bandura's (1997) Self-Efficacy Theory explains how teachers' beliefs in their capabilities influence their ability to implement technology-enhanced instruction and adapt to complex teaching environments. Together, these frameworks suggest that the integration of language and technology is not merely technical but deeply pedagogical and psychological in nature.

Empirical research consistently supports the pedagogical value of integrating language strategies with instructional technology. Studies have shown that multilingual instructional approaches enhance comprehension and engagement, particularly in contexts where English is not the primary language of communication (Bautista, 2004; Martin, 2014; Gonzales, 2020). Similarly, digital technologies have been found to improve learner motivation, provide immediate feedback, and support the development of language skills across modalities (Golonka et al., 2012; Ghanizadeh et al., 2015; Sauro & Chapelle, 2017). However, the effectiveness of such integration depends heavily on teachers' digital literacy and their ability to operationalize technology within pedagogically sound frameworks. Research indicates that while educators are generally proficient in basic technological use, many struggle to employ digital tools for higher-order language learning tasks, such as critical thinking and discourse development (Wang, 2022). Additionally, disparities in access, training, and institutional support continue to hinder effective technology integration, particularly in geographically isolated and resource-constrained settings (Li, 2014; Tovar Viera & Velasco Sánchez, 2020; Winter et al., 2021).

Digital literacy has consequently become an essential competency for educators, encompassing not only technical skills but also the ability to access, evaluate, create, and communicate information in digital environments (Ng, 2012; Eshet-Alkalai, 2004). Contemporary frameworks emphasize its multidimensional nature, including information literacy, communication, content creation, safety, and problem-solving (Feng & Sumettikoon, 2024). Importantly, studies have demonstrated a strong relationship between digital literacy and teaching efficacy, suggesting that educators who are confident in their digital competencies are more likely to design interactive, student-centered, and technology-enhanced learning experiences (Kahveci, 2021; Özdemir & Önal, 2022). Despite these advancements, research also reveals persistent gaps between technological access and meaningful pedagogical integration, as many educators continue to use technology at a superficial level rather than as a transformative instructional tool (Cauley et al., 2009; Thompson, 2013).

In the Philippine context, these challenges are further compounded by linguistic diversity and structural limitations within the educational system. With over 90 percent of learners speaking a mother tongue different from the language of instruction, the need for effective language integration strategies is particularly urgent (USAID, 2022). While policies such as Mother Tongue-Based Multilingual Education (MTB-MLE) aim to address this issue, implementation remains uneven due to inadequate resources, limited training, and contextual constraints (Tortola, 2024). Similarly, although ICT integration initiatives have been introduced to enhance educational quality, disparities in infrastructure, connectivity, and teacher readiness persist, particularly in rural and underserved regions (Eslit, 2023). These conditions highlight the complexity of integrating language and technology

in Philippine classrooms and underscore the need for context-specific research that accounts for both sociolinguistic and technological realities.

Despite the growing body of literature on technology integration and multilingual education, significant gaps remained. Existing studies predominantly focused on student outcomes or preservice teachers, with limited attention given to in-service faculty in higher education institutions. Moreover, much of the research was descriptive or correlational, often examining the frequency of technology use rather than its pedagogical depth or its interaction with language integration practices. There was also a scarcity of studies that simultaneously examined language integration, instructional technology, teaching efficacy, and digital literacy within a single analytical framework, particularly in geographically and linguistically unique contexts such as Sulu.

Addressing these gaps, the present study investigated how language integration and instructional technology influenced English language teaching efficacy and digital literacy among faculty in Higher Education Institutions (HEIs) in Sulu. Specifically, it examined the extent to which these practices were implemented, the differences across demographic variables, and the relationships among the key constructs. Situated within a multilingual and resource-constrained context, this study provided a more nuanced understanding of how pedagogical and technological competencies interact to shape effective language instruction. The findings offered empirical insights to support faculty development initiatives, inform institutional policy, and strengthen context-responsive instructional practices in higher education.

METHODS

This study employed a descriptive-correlational research design to examine the relationships among language integration, instructional technology use, teaching efficacy, and digital literacy among faculty in Higher Education Institutions (HEIs) in Sulu. This design was appropriate as it enabled the simultaneous description of variables and the examination of their interrelationships without manipulating conditions (Creswell & Creswell, 2018). Descriptive statistics were utilized to determine the extent of each construct, while inferential techniques were applied to identify differences across demographic variables and assess associations among key variables. Such an approach is widely used in educational research to explore naturally occurring relationships and patterns in instructional practices (Fraenkel et al., 2019).

The study was conducted in selected public and private HEIs in Sulu, involving 200 English language faculty members who were actively engaged in teaching during the academic year. Respondents were selected through purposive sampling, ensuring that participants possessed direct experience in language instruction and were likely to employ both linguistic and technological strategies in their teaching. Purposive sampling is appropriate in studies requiring participants with specific expertise or characteristics relevant to the research objectives (Etikan et al., 2016). The sample size was considered adequate to generate reliable estimates and support statistical analysis of group differences and relationships among variables.

Data were collected using a structured questionnaire consisting of five components: demographic profile, language integration, instructional technology use, teaching efficacy, and digital literacy. The instrument was adapted from established frameworks and validated tools, including Cenoz and Gorter (2015), García and Wei (2014), Mishra and Koehler (2006), Tschannen-Moran and Hoy (2001), Ng (2012), and Eshet-Alkalai (2004), ensuring strong theoretical grounding and construct validity. The questionnaire contained 60 items measured on a five-point Likert scale, allowing for the quantification of respondents' perceptions and practices. Prior to data collection, the instrument underwent expert validation to ensure contextual appropriateness, a common procedure to enhance

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content validity in adapted instruments (Polit & Beck, 2012). Data were gathered through formal coordination with institutional authorities and were personally administered and retrieved by the researcher to ensure a high response rate and data accuracy.

Data analysis involved both descriptive and inferential statistical techniques. Frequency and percentage distributions were used to summarize demographic characteristics, while means and standard deviations were computed to determine the extent of each major variable. To examine differences across demographic groups, independent samples t-tests and one-way analysis of variance (ANOVA) were employed, which are appropriate for comparing group means in social science research (Field, 2018). The relationships among language integration, instructional technology use, teaching efficacy, and digital literacy were analyzed using the Pearson Product-Moment Correlation Coefficient (Pearson r) to determine the strength and direction of associations. Ethical standards were strictly observed throughout the study, including informed consent, voluntary participation, confidentiality, and proper authorization from participating institutions, in line with established ethical guidelines for research involving human participants (Resnik, 2020).

RESULTS AND DISCUSSION

Table 1 presents the demographic profile of the faculty-respondents in terms of age, gender, educational attainment, length of service, and type of Higher Education Institution (HEI). The results show that the faculty respondents were predominantly 26–35 years old (47.5%), female (73.0%), and master's degree holders (55.0%), with most having 4–9 years of teaching experience (64.0%) and affiliated with State Universities and Colleges (83.0%). This indicates a faculty profile that is relatively young, academically prepared, and moderately experienced.

From a theoretical standpoint, this composition supports Self-Efficacy Theory (Bandura, 1997), as early- to mid-career educators are generally more open to adopting innovative instructional practices, including technology integration. The high level of graduate education aligns with the TPACK framework (Mishra & Koehler, 2006), suggesting adequate pedagogical and content knowledge necessary for integrating language and technology. Consistent with Kowalczyk-Waledziak et al. (2017) and Baihaki and Jahla (2019), both educational attainment and teaching experience contribute to instructional competence and adaptability.

The dominance of SUC-affiliated faculty further highlights the role of institutional context, particularly in shaping access to technological resources and professional development opportunities. This suggests that subsequent findings should be interpreted within the structural conditions of public higher education institutions. Overall, the demographic profile reflects a workforce with strong potential for instructional innovation, albeit within context-specific constraints.

Table 1

Demographic Characteristics of Respondents (N = 200)

Variable	Category	Frequency	Percentage %
Gender	Male	54	27.0
	Female	146	73.0
Age	21-25 years	39	19.5
	26-35 years	95	47.5
	36-40 years	42	21.0
	41 years and above	24	12.0
	3 years and below	35	17.5
Length of Service	4-6 years	66	33.0

Tye of HEI	7-9 years	62	31.0
	10 years and above	37	18.5
	SUC	166	83.0
	Private HEI	134	71.0
Educational Attainment	Bachelor's Degree	25	12.5
	Master's Degree	110	55.0
	Doctorate Degree	65	32.5

Table 2 presents the extent of language integration in English language teaching among faculty in Higher Education Institutions (HEIs) in Sulu. The results reveal that faculty strongly practiced language integration in English instruction ($M = 4.73$), indicating consistent use of multilingual strategies such as code-switching, translanguaging, and linguistic scaffolding. High ratings across indicators suggest that teachers deliberately leveraged students' first languages to enhance comprehension, facilitate participation, and support meaning-making in the classroom.

These findings align with Sociocultural Theory, which views language as a mediational tool for learning, where meaning is constructed through interaction and cultural context (Vygotsky). The strong use of multilingual strategies also supports the concept of translanguaging, which promotes deeper cognitive engagement and inclusivity in multilingual settings (García, 2009; Cenoz & Gorter, 2020). Rather than viewing language mixing as a deficiency, the results reinforce its role as a pedagogically sound strategy for bridging linguistic gaps and enhancing understanding.

The consistently high responses further suggest that faculty possess both the pedagogical awareness and confidence to implement language-integrated instruction effectively. This reflects a shift toward learner-centered and context-responsive teaching, where linguistic diversity is treated as an instructional resource rather than a barrier.

The strong extent of language integration indicates that HEI faculty in Sulu are already practicing culturally responsive pedagogy. However, this also underscores the need to align these practices with formal instructional frameworks and institutional support, ensuring that language integration is not only intuitive but also systematically embedded in curriculum design and teacher training programs.

Table 2

Extent of Language Integration in English Language Teaching

Statements	Mean	SD	Interpretation
I integrate English with other languages to make lessons more comprehensible.	4.93	0.26	Strongly Agree
I use students' first language(s) strategically to support English learning.	4.80	0.44	Strongly Agree
I encourage students to switch between English and local languages for clarification.	4.75	0.48	Strongly Agree
I design activities that combine English and students' home languages.	4.69	0.66	Strongly Agree
I use bilingual or multilingual resources to aid instruction.	4.65	0.64	Strongly Agree
I feel confident managing lessons that involve multiple languages.	4.70	0.58	Strongly Agree
I integrate cultural context and local terms into English lessons.	4.69	0.52	Strongly Agree
I use code-switching to explain difficult concepts.	4.75	0.48	Strongly Agree

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I allow students to express ideas first in their native language before English.	4.69	0.55	Strongly Agree
I believe language integration improves students' English	4.75	0.47	Strongly Agree
I consciously adjust my language use based on the English proficiency level of my students.	4.72	0.46	Strongly Agree
I integrate students' home languages to scaffold their understanding of English concepts.	4.74	0.48	Strongly Agree
I encourage students to compare English with their local languages to enhance comprehension.	4.70	0.58	Strongly Agree
I use bilingual or multilingual strategies to clarify difficult ideas during instruction.	4.72	0.57	Strongly Agree
I design activities that allow students to express ideas using both English and their native languages.	7.68	0.58	Strongly Agree
Overall Mean	4.73	0.35	Strongly Agree

Legend: (5) 4.50-5.0=Strongly Agree (SA); (4) 3.50 – 4.49=Agree (A); (3) 2.50 – 3.49=Neutral (N); (2) 1.50 – 2.49=Disagree (D); (1) 1.00 – 1.49=Strongly Disagree (SD)

Table 3 presents the extent of instructional technology use in English language teaching among faculty in Higher Education Institutions (HEIs) in Sulu. The results indicate that faculty strongly utilized instructional technology in English language teaching ($M = 4.65$, $SD 0.37$), reflecting consistent integration of digital tools such as multimedia resources, learning management systems, and interactive platforms. This suggests that technology is not merely present but actively embedded in instructional practices to support lesson delivery, engagement, and assessment.

This finding aligns with the TPACK framework (Mishra & Koehler, 2006), which emphasizes the integration of technology, pedagogy, and content knowledge in effective teaching. The high level of technology use indicates that faculty possess sufficient technological and pedagogical competence to incorporate digital tools meaningfully into language instruction. It also supports prior research asserting that technology enhances engagement, multimodal learning, and access to authentic language input (Warschauer, 2011).

However, while the overall extent is high, the slightly lower means in areas such as learning management systems and interactive tools suggest potential variability in depth of integration, consistent with literature noting that teachers often use technology at functional rather than transformative levels (Tovar Viera & Velasco Sánchez, 2020). This indicates that while access and usage are evident, the pedagogical sophistication of technology integration may still vary across faculty.

The strong extent of instructional technology use demonstrates readiness for digital instruction among HEI faculty in Sulu. Nonetheless, there is a need to strengthen advanced and transformative integration practices, ensuring that technology use moves beyond support functions toward enhancing higher-order language learning and critical engagement.

Table 3
Extent of Instructional Technology Use in English Language Teaching

Statements	Mean	SD	Interpretation
I use technology to prepare my English lesson materials.	4.83	0.44	Strongly Agree

I integrate multimedia (audio, video, images) to enhance language learning.	4.80	0.44	Strongly Agree
I use learning management systems (e.g., Google Classroom, Moodle) in teaching.	4.70	0.61	Strongly Agree
I encourage students to use online platforms for language practice.	4.63	0.59	Strongly Agree
I adapt my teaching strategies based on available technology.	4.16	0.78	Strongly Agree
I use interactive tools (e.g., Kahoot, Quizizz) to make lessons engaging.	4.62	0.64	Strongly Agree
I use technology to assess students' English performance.	4.66	0.61	Strongly Agree
I can troubleshoot basic technical problems in class.	4.64	0.55	Strongly Agree
I feel confident integrating new technologies into English teaching.	4.70	0.53	Strongly Agree
I believe technology increases student motivation in learning English.	4.69	0.53	Strongly Agree
I integrate digital tools that allow students to collaborate in real-time.	4.69	0.54	Strongly Agree
I use technology to provide immediate feedback on students' language performance.	4.64	0.58	Strongly Agree
I regularly explore new educational technologies relevant to English teaching.	4.68	0.55	Strongly Agree
I use online platforms to supplement classroom discussions and assignments.	4.65	0.56	Strongly Agree
I troubleshoot basic technical problems to ensure smooth delivery of lessons.	4.65	0.56	Strongly Agree
Overall Mean	4.65	0.37	Strongly Agree

Legend: (5) 4.50-5.0=Strongly Agree (SA); (4) 3.50 – 4.49=Agree (A); (3) 2.50 – 3.49=Neutral (N); (2) 1.50 – 2.49=Disagree (D); (1) 1.00 – 1.49=Strongly Disagree (SD)

Table 4 presents the extent of English language teaching efficacy among faculty in Higher Education Institutions (HEIs) in Sulu. The results indicate that faculty demonstrated a high level of teaching efficacy ($M = 4.67$, $SD = 0.36$), suggesting strong confidence in their ability to plan, implement, and evaluate English language instruction effectively. This reflects a high degree of perceived competence in managing classroom instruction, addressing learner diversity, and facilitating meaningful language learning experiences.

This finding is strongly supported by Self-Efficacy Theory (Bandura, 1997), which posits that individuals with high self-efficacy are more likely to employ effective instructional strategies, persist in challenging teaching situations, and adopt innovative practices. The high level of teaching efficacy observed in this study indicates that faculty possess the confidence necessary to integrate both language strategies and instructional technology in their teaching.

Furthermore, the result aligns with prior research indicating that teachers with strong efficacy beliefs are more inclined to implement student-centered and technology-enhanced instruction, thereby improving learning outcomes. In the context of this study, the high teaching efficacy may be influenced by the respondents' academic qualifications and moderate teaching experience, which contribute to professional competence and instructional adaptability.

The strong level of teaching efficacy suggests that faculty are well-positioned to sustain effective English language instruction. However, continuous professional development remains

essential to further enhance instructional confidence, particularly in integrating advanced pedagogical and technological approaches in multilingual learning environments.

Table 4

Extent of English Language Teaching Efficacy

Statements	Mean	SD	Interpretation
I am confident in my ability to explain difficult English concepts.	4.87	0.38	Strongly Agree
I can use different strategies to maintain students' interest in English.	4.81	0.42	Strongly Agree
I manage classroom behavior effectively during English activities.	4.76	0.45	Strongly Agree
I motivate students who show low interest in learning English.	4.76	0.46	Strongly Agree
I adapt my English lessons to meet diverse student needs.	4.78	0.44	Strongly Agree
I can improve the understanding of students who struggle with English.	4.74	0.50	Strongly Agree
I handle unexpected challenges in teaching English effectively.	4.78	0.47	Strongly Agree
I provide constructive feedback to help students improve their English.	4.75	0.47	Strongly Agree
I am confident in using various assessment methods for English learning.	4.86	0.40	Strongly Agree
I believe my teaching significantly contributes to students' English progress.	4.82	0.43	Strongly Agree
I am confident in helping students improve their English communication skills.	4.66	0.48	Strongly Agree
I can effectively manage challenges that arise during English language instruction.	4.71	0.48	Strongly Agree
I can motivate students to actively participate in English learning tasks.	4.77	0.44	Strongly Agree
I am capable of adjusting my teaching strategies when students struggle with English.	4.77	0.46	Strongly Agree
I can successfully assess students' English proficiency using appropriate tools.	4.78	0.44	Strongly Agree
Overall Mean	4.77	0.36	Strongly Agree

Legend: (5) 4.50-5.0=Strongly Agree (SA); (4) 3.50 – 4.49=Agree (A); (3) 2.50 – 3.49=Neutral (N); (2) 1.50 – 2.49=Disagree (D); (1) 1.00 – 1.49=Strongly Disagree (SD)

Table 5 presents the extent of digital literacy among faculty in Higher Education Institutions (HEIs) in Sulu. The results indicate that faculty demonstrated a high level of digital literacy ($M = 4.70$, $SD = 0.35$), suggesting strong competence in using digital tools for information access, communication, content creation, and instructional tasks. This reflects that faculty are not only technologically active but also capable of navigating and utilizing digital environments to support teaching and learning processes.

This finding aligns with contemporary digital literacy frameworks, which conceptualize digital competence as a multidimensional construct encompassing information literacy, communication, content creation, and problem-solving (Ng, 2012; Eshet-Alkalai, 2004). The high level of digital literacy

further supports the TPACK framework, as technological knowledge is a critical component in enabling effective integration of digital tools into pedagogy (Mishra & Koehler, 2006).

Moreover, the result reinforces prior studies indicating a strong relationship between digital literacy and teaching effectiveness, where educators with higher digital competence are more capable of designing interactive and technology-enhanced learning environments (Kahveci, 2021). In the context of this study, the high digital literacy level may be attributed to the respondents' academic qualifications and exposure to technology-mediated instruction, particularly in post-pandemic educational settings.

The strong level of digital literacy suggests that faculty are well-equipped to engage in technology-enhanced language teaching. However, continuous development is necessary to ensure that digital skills evolve alongside emerging technologies, particularly in promoting critical, creative, and pedagogically meaningful uses of digital tools in multilingual classrooms.

Table 5
Extent of Digital Literacy

Statements	Mean	SD	Interpretation
I can use digital tools to search for teaching resources effectively.	4.88	0.36	Strongly Agree
I can evaluate the reliability of online information for teaching English.	4.81	0.46	Strongly Agree
I can use digital platforms to communicate and collaborate with colleagues.	4.57	0.51	Strongly Agree
I can create digital content (e.g., presentations, lesson plans) for English teaching.	4.76	0.47	Strongly Agree
I know how to protect personal and student data online.	4.79	0.42	Strongly Agree
I can guide students in practicing responsible use of the internet.	4.68	0.49	Strongly Agree
I can solve basic digital problems when they arise.	4.72	0.48	Strongly Agree
I am confident in adapting to new digital platforms.	4.73	0.70	Strongly Agree
I can help students develop their own digital literacy skills.	4.70	0.50	Strongly Agree
I believe digital literacy is essential for effective English teaching.	4.74	0.46	Strongly Agree
I can evaluate the credibility of online sources before using them for instruction.	4.73	0.48	Strongly Agree
I can create digital learning materials that align with my English teaching objectives.	4.70	0.48	Strongly Agree
I practice responsible and ethical use of digital information when preparing lessons.	4.79	0.68	Strongly Agree
I can guide students on how to use technology safely and responsibly.	4.55	0.69	Strongly Agree
I am confident in adapting to new digital platforms for teaching and learning.	4.54	0.69	Strongly Agree
Overall Mean	4.70	0.35	Strongly Agree

Legend: (5) 4.50-5.0=Strongly Agree (SA); (4) 3.50 – 4.49=Agree (A); (3) 2.50 – 3.49=Neutral (N); (2) 1.50 – 2.49=Disagree (D); (1) 1.00 – 1.49=Strongly Disagree (SD)

Table 6 presents the test of significant differences in the extent of language integration when grouped according to demographic variables. The results revealed that language integration did not

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significantly differ across age, gender, and type of HEI ($p > .05$), indicating that faculty consistently applied multilingual instructional strategies regardless of these demographic characteristics. This suggests that language integration is a shared pedagogical practice among faculty, likely shaped by the multilingual context of Sulu rather than individual attributes.

However, significant differences were observed in terms of educational attainment and length of service ($p < .05$). Specifically, faculty with higher educational qualifications demonstrated significantly different levels of language integration. Post hoc analysis further revealed that those with master's and doctoral degrees exhibited higher levels of language integration compared to bachelor's degree holders, indicating that advanced academic preparation enhances the ability to implement multilingual instructional strategies. This supports prior findings that higher educational attainment strengthens pedagogical competence and instructional flexibility.

Similarly, differences across length of service suggest that teaching experience plays a critical role in shaping language integration practices. More experienced faculty are likely to have developed adaptive instructional strategies through prolonged classroom exposure, enabling them to effectively utilize learners' linguistic resources.

From a theoretical perspective, the findings align with Sociocultural Theory, which emphasizes that instructional practices are shaped through experience and interaction within specific teaching contexts (Vygotsky). At the same time, the influence of educational attainment reflects the role of professional knowledge development, where advanced training enhances teachers' ability to integrate language meaningfully in instruction.

Table 6
Differences in Language Integration by Demographic Profile

Variable	Mean Value	p-value	Interpretation
Age	0.079	.971	Not Significant
Gender	-1.679	.95	Not Significant
Educational Attainment	9.904	.000	Significant
Length of Service	9.463	.000	Significant
Type of HEI	0.427	.670	Not Significant

**Significant at alpha 0.05*

Table 7 presents the test of significant differences in the extent of instructional technology use when grouped according to demographic variables. The results revealed that instructional technology use did not significantly differ in terms of age ($F = 0.078$, $p = .972$) and type of HEI ($t = 0.433$, $p = .665$), indicating that faculty demonstrate comparable levels of technology use regardless of age group or institutional classification. This suggests that access to and utilization of instructional technology are generally consistent across faculty in both public and private HEIs. However, significant differences were observed in terms of gender ($t = -2.285$, $p = .023$), with female faculty ($M = 4.6826$) demonstrating higher levels of instructional technology use than male faculty ($M = 4.5494$). This indicates variation in engagement with digital tools across gender.

Significant differences were also found in educational attainment ($F = 3.219$, $p = .042$), indicating that instructional technology use varies according to academic qualifications. Faculty with higher educational attainment tend to demonstrate stronger integration of technology in teaching. Similarly, length of service yielded significant differences ($F = 3.290$, $p = .022$), suggesting that teaching experience

influences instructional technology use. More experienced faculty are likely to have developed greater competence in integrating digital tools through sustained exposure and practice.

From a theoretical perspective, these findings support the TPACK framework, which emphasizes that effective technology integration is influenced by the development of technological, pedagogical, and content knowledge (Mishra & Koehler, 2006). The significant effects of educational attainment and experience highlight the role of professional knowledge development, while the gender difference suggests variation in engagement with instructional technology.

Table 7

Differences in Instructional Technology Use by Demographic Profile

Variable	Mean Value	p-value	Interpretation
Age	0.078	.972	Not Significant
Gender	-2.285	.023	Significant
Educational Attainment	3.219	.042	Significant
Length of Service	3.290	.022	Significant
Type of HEI	0.433	.665	Not Significant

**Significant at alpha 0.05*

Table 8 presents the test of significant differences in the extent of instructional technology use when grouped according to demographic variables. The results indicate that instructional technology use did not significantly differ in terms of age ($F = 0.078$, $p = .972$), suggesting that faculty across age groups demonstrate comparable levels of technology use. This implies that technological engagement is not age-dependent, reflecting the widespread adoption of digital tools in contemporary teaching environments.

However, significant differences were observed in terms of gender ($t = -2.285$, $p = .023$), indicating that male and female faculty differed in their level of instructional technology use. Based on the group means, female faculty demonstrated higher technology use than male faculty, suggesting stronger engagement with digital tools in instructional practice.

Significant differences were also found in educational attainment ($F = 3.219$, $p = .042$). Post hoc analysis revealed that faculty with doctoral degrees exhibited significantly higher instructional technology use compared to those with bachelor's degrees ($p = .042$), while the difference between bachelor's and master's degree holders was not statistically significant ($p = .054$). This indicates that advanced academic training enhances the capacity to integrate technology more effectively in teaching. Similarly, length of service showed significant differences ($F = 3.290$, $p = .022$), suggesting that teaching experience influences instructional technology use. This implies that as faculty gain more experience, they develop greater competence and confidence in utilizing digital tools in instruction.

From a theoretical perspective, these findings align with the TPACK framework, which emphasizes that effective technology integration depends on the interaction of technological knowledge, pedagogical knowledge, and content expertise (Mishra & Koehler, 2006). The significant influence of educational attainment and experience reflects the role of professional knowledge development in strengthening technology integration. Additionally, the gender difference may be associated with variations in engagement, training exposure, or instructional preferences, as noted in prior technology adoption studies.

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Differences in Teaching Efficacy by Demographic Profile

Variable	Mean Value	p-value	Interpretation
Age	0.560	.642	Not Significant
Gender	-1.469	.143	Not Significant
Educational Attainment	1.733	.179	Not Significant
Length of Service	4.631	.004	Significant
Type of HEI	0.451	.653	Not Significant

**Significant at alpha 0.05*

Table 9 presents the test of significant differences in the extent of digital literacy when grouped according to demographic variables. The results revealed that digital literacy did not significantly differ across age ($F = 1.000$, $p = .394$), gender ($t = -0.702$, $p = .483$), educational attainment ($F = 0.820$, $p = .442$), and type of HEI ($t = -1.000$, $p = .318$). This indicates that faculty demonstrate comparable levels of digital competence regardless of these demographic characteristics, suggesting that digital literacy has become a shared and normalized competency among educators.

However, a significant difference was found in terms of length of service ($F = 2.820$, $p = .040$), indicating that digital literacy varies based on teaching experience. This suggests that experience plays a role in shaping digital competence, possibly through accumulated exposure to technology use, institutional training, and evolving instructional demands.

From a theoretical perspective, the findings support the view that digital literacy is a developmental competence, influenced by continuous engagement and practice rather than static demographic factors. The significant effect of experience aligns with models of professional learning and skill acquisition, where competencies improve through sustained application over time.

Table 9

Differences in Digital Literacy by Demographic Profile

Variable	Mean Value	p-value	Interpretation
Age	1.000	.394	Not Significant
Gender	-0.702	.483	Not Significant
Educational Attainment	0.820	.442	Not Significant
Length of Service	2.820	.040	Significant
Type of HEI	-1.000	.318	Not Significant

**Significant at alpha 0.05*

Table 10 presents the correlation among language integration, instructional technology use, English language teaching efficacy, and digital literacy among faculty in Higher Education Institutions (HEIs) in Sulu. The results revealed statistically significant positive correlations among all variables ($p = .000$), indicating that language integration, instructional technology use, teaching efficacy, and digital literacy are strongly interrelated competencies in English language teaching.

Notably, the strongest relationship was found between instructional technology use and teaching efficacy ($r = .708$), indicating a very high correlation. This suggests that faculty who effectively utilize instructional technology tend to demonstrate higher confidence and competence in teaching.

This finding reinforces the idea that technology integration enhances not only instructional delivery but also teachers' perceived capability to facilitate learning.

Language integration also showed high positive correlations with instructional technology use ($r = .664$), teaching efficacy ($r = .645$), and digital literacy ($r = .555$). These results indicate that the use of multilingual strategies is closely associated with both technological competence and instructional confidence. This supports the view that effective language teaching in multilingual contexts requires the combined application of linguistic and technological skills.

Furthermore, digital literacy was significantly correlated with all variables, particularly teaching efficacy ($r = .619$) and instructional technology use ($r = .541$), suggesting that digital competence serves as a foundational skill that enhances both technology integration and instructional effectiveness.

From a theoretical perspective, these findings strongly support the TPACK framework, which emphasizes the interconnectedness of technology, pedagogy, and content knowledge. The results also align with Self-Efficacy Theory (Bandura, 1997), as increased competence in technology and language integration contributes to stronger teaching confidence. Additionally, the relationships reflect Sociocultural Theory, where tools (technology) and language jointly mediate learning and instructional processes.

Table 10

Correlation among Language Integration, Instructional Technology Use, Teaching Efficacy, and Digital Literacy

Variable	r-value	p-value	Interpretation
Language Integration and Instructional Technology Use	.664	.000	High
Language Integration and Teaching Efficacy	.645	.000	High
Language Integration and Digital Literacy	.555	.000	High
Instructional Technology Use and Teaching Efficacy	.708	.000	Very High
Instructional Technology Use and Digital Literacy	.541	.000	High
Teaching Efficacy and Digital Literacy	.619	.000	High

*Significant at alpha 0.05

CONCLUSION

This study examined the effects of language integration and instructional technology on English language teaching efficacy and digital literacy among faculty in Higher Education Institutions (HEIs) in Sulu. The findings revealed that faculty demonstrated high levels of language integration, instructional technology use, teaching efficacy, and digital literacy. Inferential analysis showed that most variables did not differ significantly across demographic characteristics, except for educational attainment and length of service, which influenced language integration and instructional technology use, and length of service, which affected teaching efficacy and digital literacy. Correlation analysis further established strong and significant relationships among all variables, particularly between instructional technology use and teaching efficacy.

The study contributes to the field by providing empirical evidence on the interconnected nature of language integration, technology use, teaching efficacy, and digital literacy within a multilingual

higher education context. It highlights that effective English language teaching is shaped by the combined influence of pedagogical, technological, and linguistic competencies, reinforcing the relevance of integrated frameworks such as TPACK and Self-Efficacy Theory.

However, the study is limited by its descriptive-correlational design, which does not establish causality, and its focus on a specific geographical context, which may limit generalizability. Additionally, reliance on self-reported data may introduce response bias.

Future research may explore causal relationships using experimental or longitudinal designs, examine additional variables such as institutional support and training, and expand the scope to other regions to enhance generalizability. Further studies may also investigate the depth and quality of technology and language integration practices to better understand their impact on teaching and learning outcomes.

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