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Digital literacy, practices, and transformative implications in teaching English as a second language

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Abstract

This study addressed the increasing importance of digital literacy, digital practices, and transformative implications in ESL teaching among teachers of vocational colleges in Anhui province. The study focused on the importance of digital literacy and their role in the English education reform, since digitization has reshaped the education landscape which China attaches great importance to promote high-quality development of education. This quantitative descriptive study utilized the descriptive method using a modified adapted questionnaire distributed to 400 teachers from two selected schools. Specifically, this study aimed to describe the profile of respondents in terms of age, sex, years of teaching English and level of education; identified the digital literacy in ESL teaching in terms of digital awareness and teaching innovation; determined the digital practice in ESL teaching in terms of use of technology tools, use of technology in language learning, use of technology in English teaching; assessed transformative implications in ESL teaching in terms of self-directed teaching motivation, self-directed metacognitive strategies and teaching anxiety related to technology; tested significant differences among the three variables when demographic variables are grouped; tested significant relationship among digital literacy, digital practice and transformative implications in ESL teaching; proposed faculty development a program to enhance ESL teaching based on the results of the study. Results revealed that majority of the respondents are 30-50 years old, female, teaching for 10 years below, and with master's degree. Respondents have assessed themselves to have good digital literacy in ESL teaching, have use good digital practices in teaching ESL. In terms of transformative implications, teachers are self- directed in terms of motivation and strategies and gained technology anxiety in teaching ESL, Age, sex, years of teaching and highest educational attainment do not pose significant difference in terms of digital literacy, practices and digital transformations except sex that has significant difference on digital awareness. Digital literacy is highly significantly related to digital practices and transformative implications. Based from the results of the study, a faculty development program was proposed to improve the digital skills of ESL teachers. Universities may design regular or routine faculty development training focused on technology use in the classroom as a refresher or updating mechanism for teachers since technology is fast- evolving.

Keywords: digital literacy, digital practices, transformative implications

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1. Introduction

In today's era, digital technology has extensively permeated various aspects of social and economic life. The digital economy has emerged as a powerful global catalyst for economic expansion. According to White Paper on Global Digital Economy (2023) published by the China Academy of Information and Communications Technology (CAICT), by the year 2024, the added value of the digital economy of 51 countries is anticipated to reach US$41.4 trillion, accounting for 46.1% of GDP (CAICT, 2024). The advent of information knowledge has revolutionized the way societies engage with various domains, such as education, healthcare, and the environment (Kayembe, et. al., 2019). The process of digitization has brought about fundamental changes to the communication landscape, significantly impacting the way in which people communicate and extensively transforming the realms of language and education.

Numerous countries and international organizations have acknowledged the significance of digitalization in education. Several countries have developed education digitalization strategies and policies to promote the integration of digital technology and education. For instance, the European Union has introduced The Digital Education Action Plan (2021-2027), while the United States has implemented the National Education Technology Plan. Similarly, France has its Digital Education Strategy 2023-2027. In February 2022, China proposed the implementation of a national education digitalization strategic action, which includes policies like China Education Modernization 2035, Education Informatization 2.0 Action Plan, and the Guiding Opinions on Promoting the Construction of New Education Infrastructure and Building a High-Quality Education Support System. These initiatives aim to facilitate the deep integration of digital technology into various education and teaching models.

Promoting the full implementation of education digitization is a complex project that involves multiple aspects. With so many digital resources at hand, the task of the lecturer will be fewer lectures, and to act more as a facilitator of resources, and to monitor activities and results over time (Bygstad et al., 2022). The digital transformation of education has placed higher demands and expectations on teachers. In a digital context, teaching is the deep integration of information technology with teaching process and teaching content in some sense. Thus, teachers are the crucial key to the integration. Only teachers with good digital literacy can build a mixed online and offline teaching environment. The application of intelligent technology to teaching facilitates to carry out the inquiry and heuristic classroom teaching activities. In doing so, a new model of networked, immersive and intelligent teaching can be set up. In order to promote teaching reform under digital conditions, create a series of new models of education and teaching, and improve teaching quality, the key is the “teacher” who carries out teaching by using digital equipment, or resources and tools but not the dazzling digital equipment or resources and tools

Teachers' digital literacy plays a key factor in promoting the digital transformation of education. Continuously improving teachers' digital literacy is of great significance in building a team of high-quality and professional teachers in the digital era and accelerating the digitalization of education (Wu, et al., 2023). Sysoyev, et. al.,(2015) underscored that a crucial driver for the integration of digital abilities and information and communication technology (ICT) among foreign language educators is the recognition that ICT proficiency constitutes a core aspect of their professional expertise. This perspective stresses the indispensable role of ICT skills in the repertoire of competencies required for effective language teaching in today's digital era.

Digitalization presents both opportunities and challenges for English teaching. College English teachers can now utilize digital technology to teach whenever and wherever they choose. It could present language learners with access to native speakers and engage them in meaningful and authentic contexts which help to cultivate their ability to communicate, collaborate with others and solve the realistic problems of life (Kessler, 2018). Language

learners are more active in learning when they feel connected to the real world. Technological innovations also provide more learning tools and scenarios for foreign language learning (Makhkamova et al., 2017) and could make students' learning more personalized (Nair, 2019).

Digital literacy is the ability to effectively find, use, summarize, evaluate, create, and communicate information using digital technologies, typically on the internet (Sparks et al., 2016; Spante et al., 2018). It involves a range of skills that are required for full participation in our increasingly digital world, including the ability to use digital devices, navigate online platforms, understand and create digital content, and maintain safety and privacy in digital environments (Richardson, et. al., 2019). Essentially, digital literacy combines the technical know-how of navigating digital devices with the critical thinking skills required to effectively process and evaluate information in the digital age. Identified as crucial for the 21st century are the skills of managing technology, handling information effectively, communication skills, working collaboratively, encouraging creativity, critically analyzing situations, and developing problem-solving solutions (Van Laar et al., 2017).

Digital practice refers to the ways in which digital tools and environments are used to carry out tasks and activities. It encompasses a broad spectrum of behaviors from how individuals interact with digital technology to how organizations implement digital processes within their operations. Digital practice includes the adoption of digital devices, the use of software and applications for various purposes, the methods employed for communicating online, the strategies for managing digital information, and the approaches to problem-solving using digital resources. It is a dynamic field, constantly evolving with technological advances and changing how people live, work, and learn. The digital practices of an ESL teacher refer to how they use digital technologies and resources to teach English. The utilization of digital technologies in ESL education encompassed a strategic deployment of online platforms, educational applications, and multimedia tools to facilitate English language acquisition (Zou et al., 2018). This approach includes leveraging videos, audio recordings, and interactive software to augment students' linguistic capabilities, alongside employing digital channels such as social media and blogs for enhanced interaction and communication. Proficiency in digital tools and their integration into pedagogical strategies enabled ESL educators to significantly enrich the learning journey, offering a more comprehensive resource base and fostering learning spaces that are both more engaging and interactive (Diallo, 2014; Ainoutdinova, et. al., 2018).

Transformative implications refer to significant changes or effects that can reshape the way something is understood, practiced, or perceived. The concept was concluded from the three models of literacy proposed by Bélisle (2006). In the study, he considered literacy as an intellectual empowerment. Beyond simply understanding written texts and numbers within specific cultural and ideological contexts, literacy also plays a vital role in enhancing and reshaping cognitive capacities. This expansive perspective underscores literacy's impact on communication as well as its ability to enrich and advance human thought processes.

In the context of ESL Teacher's Digital Literacy, transformative implications might involve how the integration of digital technologies in ESL teaching can fundamentally alter teaching methodologies, enhance learning experiences, and improve educational outcomes. The impact of ESL digital technology on teachers includes changes in their motivation, the adoption of metacognitive strategies for teaching and learning, and variations in anxiety levels related to technology use. These elements combined can lead to a profound transformation in the educational landscape, particularly in how language is taught and learned (Wei et al., 2014). However, studies focusing on ESL teachers 'digital literacy practices in high education are still scarce. It is generally agreed that the importance of digitalization for ESL teaching has been increasing for some obvious reasons. These are promoting English teaching reform, serving for the high-quality English language teaching, and ensuring easy access to exceptional English materials. Conversely, the digital literacy of ESL teachers has not garnered the equivalent level of attention. The research question is motivated by the assumption that in a digital learning and teaching space, the adoption of digital practices plays a crucial role in advancing the reform of ESL education. Moreover, the digital literacy of ESL educators is paramount in facilitating the seamless integration of emerging technologies with English language education and pedagogy. Given the distinct nature of English

language instruction, it is imperative for ESL teachers to possess the requisite skills and literacies. Simultaneously, they are also obliged to constantly improve their own digital literacy and actively engage in digital pedagogical practice. Indeed, while there is a widespread recognition among ESL teachers of the numerous benefits that digitalization brings to the teaching in ESL classroom, they don't have clear mechanics and supervision on how to make use of digital technology effectively and efficiently; hence they need proper training and step-by-step guidance,

This study aimed to develop pedagogical strategies and introduce a teacher training program designed to improve ESL teachers' instructional skills. This program seeks to foster their professional development and equip them with the necessary tools to navigate the digital transformation in English language teaching. Ultimately, the initiative endeavors to prepare educators who are well-suited to meet the challenges of the information age, thereby enhancing the quality of language education. In the digital age, the new challenges and demands placed on teachers highlight a significant gap in the integration of digital literacy within ESL teaching. Despite the crucial role of digital technologies in enhancing educational quality, their incorporation into English language teaching remains insufficiently explored and underutilized. Investigating teachers' digital literacy, the application of digital technologies, and their impact on teachers is urgent. A thorough understanding and effective use of these elements are essential for leveraging digital technologies to promote high-quality educational development, meet the demands of the digital era, and cultivate talents that align with contemporary needs.

Objectives of the Study - The purpose of this study is to explore digital literacy, digital practices, and transformative implications in ESL teaching among teachers of vocational colleges in Anhui province in order to provide pedagogical plans for ESL teaching. Specifically, this study identified the digital literacy in ESL teaching in terms of digital awareness and teaching innovation; determined the digital practice in ESL teaching in terms of use of technology tools, use of technology in language learning, use of technology in English teaching; assessed transformative implications in ESL teaching in terms of self-directed teaching motivation, self-directed metacognitive strategies and teaching anxiety related to technology; tested significant relationship among digital literacy, digital practice and transformative implications in ESL teaching; proposed a faculty development a program to enhance ESL teaching based on the results of the study.

2. Methods

Research Design - This study employed the descriptive quantitative research aimed at describing and interpreting phenomena, problems and facts in education. This research method used survey to provide objective records and real descriptions of educational events. Through the use of quantitative method, the researcher collected and analyzed data in order to produce quantifiable and comparable results for the needed topics

Participants of the Study - Based on the calculations using the Raosoft calculator, the estimated total population for the study involves higher education teachers. Using higher education institutions in Anhui Province as the research context, 400 teachers were selected as respondents to participate in the study using a simple random sampling technique. The selection focused primarily on those teachers who use technology in their classroom instruction regardless of the year level they handle.

Data Gathering Instrument - A four-point Likert scale was chosen as the primary assessment instrument for this study. This four-point rating system is a widely used instrument designed to capture the respondents' views or feelings about a particular topic or situation and the last part was inspired from the Computer Technology Use Scale (CTUS). It was structured into several parts, focusing on gathering detailed information about ESL teachers' profiles and their perspectives on digital literacy and practices. Part I collects demographic information such as age, sex, years of teaching English, and highest educational attainment. Part II delves into digital literacy in ESL teaching, exploring teachers' awareness and attitudes towards digital literacy, its criticality in higher education, and its application in English conversation teaching. The questionnaire uses a Likert scale ranging from "Strongly Agree" to "Strongly Disagree" to measure responses. This survey aims to assess the impact of digital practices on

ESL teaching and identify areas for potential improvement in digital literacy among vocational college teachers in Anhui Province. The indicators Digital Awareness and teaching innovation were remarked as good with Cronbach alpha of 0.872 and 0.879 respectively. Use of technology tools (0.926) was rated excellent, use of technology in language learning (0.792) was acceptable; Use of technology in English teaching was rated good as well (0.837). Meanwhile, self-directed-motivation in ESL teaching was acceptable (0.837), self-directed learning metacognitive strategies were good (0.870) and teaching anxiety related to technology was acceptable (0.760). Overall, the results are indicative that the instrument is reliable and worthy of distribution.

Data Gathering Procedures - This study collected data in the form of an online survey by contacting respondents beforehand. A link to the online questionnaire was sent to the respondents via instant messenger after confirming that the respondents understood and appreciated the purpose and ethics of the study. The respondents answered the questionnaire through their cell phones or computers and the questionnaire was saved in their cell phones or computers after completion. The questionnaire was stored in the backend of Questionnaire Star (the Chinese version of Google Questionnaire and then discussed until the steps that all data were collected and interpreted. The survey responses were tallied and forwarded to the professional statistician for statistical analysis. The researcher made sure that the administration of the questionnaire was personally handled and monitored until its completion.

Data Analysis - This study used SPSS 27.0 as a data analysis tool, SPSS software has advantages in data analysis and statistics. Therefore, the use of SPSS is preferred by many scholars for data analysis and secondly, the descriptive analysis methods used in this study include mean, frequency distribution and percentage distribution statistics. For the validity and reliability analysis used after the pilot test, this study used Cronbach's alpha to verify the rigor of the questionnaire and the basic requirements of scientific analysis. For inferential analysis, linear regression analysis was used in this study.

Ethical Considerations - Ethical considerations in academic research play a crucial role in ensuring the quality of research and protecting the rights of participants, Firstly, ensuring that all participants understand the purpose and process of the research and give informed consent not only ensures their autonomy, but also increases the transparency and trust in the research. This is key to building trust between the researcher and the participants, especially when the research involves potential risks. Secondly, respect for privacy and confidentiality of data is one of the core ethical principles. Participants should trust the researcher to handle their information appropriately and not allow their identity to be exposed or misused. At the same time, treating all participants fairly and ensuring that they are not discriminated against on the basis of factors such as gender, age, ethnicity or socio-economic status will ensure that the research is broad and representative. In addition, transparency and honesty are particularly important when reporting research findings. Falsification or manipulation of data not only undermines the credibility of the academic community, but may also lead to erroneous conclusions or recommendations, further causing potential harm to society. Ethical considerations for human beings involvedare applied and on the other hand, that researcher values the privacy, rights of other beings and confidentiality in the pursuit of knowledge. Finally, the research has undergone checking and approval of the Ethics Review Committee of the university.

3. Results and discussion

Table 1
Summary on Digital Literacy in ESL Teaching

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Digital awareness	3.05	Agree	1
2. Teaching Innovation	2.98	Agree	2
Composite Mean	3.02	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 1 shows the summary on digital literacy in ESL teaching, garnering a weighted mean of 3.02, interpreted as agreed by the respondents. The digital literacy's role in ESL teaching, focusing on two main aspects digital awareness and teaching innovation. Digital awareness has a weighted mean of 3.05, indicating agreement and

ranking first, which is slightly more critical in the context of ESL teaching. Teaching innovation, with a weighted mean of 2.98, also agrees but is ranked second, showing a slightly lower but still significant emphasis on innovative practices in teaching. The composite mean of 3.02 across these categories indicates a general agreement on the importance of both digital awareness and teaching innovation in ESL teaching.

Digital awareness ranks first in table because it encapsulates the foundational skills necessary for navigating the digital landscape effectively in educational settings. This priority reflects the consensus on the critical role digital competencies play in accessing, analyzing, and applying information for both educators and students to effectively navigate and utilize online resources, platforms, and tools in a technologically driven world. Digital awareness serves as the bedrock for implementing teaching innovations and integrating technology into ESL instruction, emphasizing its essential place in contemporary education. It underscores the shift towards digital-centric education, where the ability to critically assess, engage with, and apply digital content directly impacts teaching quality and learning outcomes.

The fast-paced evolution of digital technology had transformed the landscape of education, making digital literacy a critical skill for participating in a digital world (Bărbuceanu, 2020). The pandemic had accelerated the adoption of online and blended learning, highlighting the necessity of digital competencies for both teaching and learning continuity (Lester, et. al., 2023). Digital tools offered unique opportunities to engage students actively and promote learner autonomy, allowing them to take control of their learning process by making decisions about how to solve problems, where to find information, and how best to present it (Kessler, 2018). Navigating digital content requires critical thinking to evaluate the reliability of information and solve problems creatively, skills that are essential in the digital age. The digital environment fostered social relatedness, enabling learners to connect and collaborate with others, thus enhancing the learning experience and building community (Blau et al., 2020). Digital literacy is considered a 21st-century skill, integral to developing other life competencies such as communication, collaboration, and creative thinking (Wrahatnolo, 2018). Digital literacy in ESL classrooms provides language learning opportunities, allowing students to practice English in authentic digital contexts (Yuan et al., 2019). Online education can make classes more inclusive by offering access to students who may not attend in-person classes for various reasons, thus democratizing education (Jazienicki, et. al., 2021). The shift to digital teaching required educators to be well-prepared and adapt their curriculum to online platforms, a challenge that underscores the importance of ongoing professional development in digital literacy (Kilag et al., 2019). These factors collectively highlighted the multifaceted importance of digital awareness in ESL teaching, emphasizing not just the technical ability to use digital tools but a holistic approach that includes critical thinking, ethical considerations, and effective communication in the digital realm (Pegrum, et al., 2022).

In rank 2, Teaching Innovation, as the second indicator encompasses the application of digital tools and resources to develop and implement new teaching methodologies in ESL education. It focuses on leveraging digital literacy to enhance teaching effectiveness and student engagement through creative, interactive, and technology-driven instructional strategies. This approach aims to foster a more dynamic learning environment that caters to the diverse needs of learners in the digital age, emphasizing the importance of educators being not only digitally aware but also innovative in their teaching practices. It highlights the application and practical use of digital tools in enhancing English conversation teaching. While Digital Awareness provides the necessary foundation, Teaching Innovation focuses on the active implementation of these digital competencies to create engaging, effective teaching environments. This indicated a balanced recognition of both understanding digital tools and actively applying them to innovate teaching methods, reflecting an integrated approach to digital literacy in ESL education (Almusharraf, et. al., 2020). This reflects its vital role in applying digital literacy for pedagogical improvement. While foundational knowledge of digital tools is essential, the ability to innovate teaching practices using these tools is crucial for enhancing learning experiences and outcomes in ESL. This ranking underscored the importance of not just being aware of digital technologies but actively integrating them into teaching strategies to foster a more interactive, engaging, and effective learning environment (Aljawarneh, 2020).

Table 2
Summary Table on Digital Practices in ESL Teaching

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Use of technology tools	3.05	Agree	2
2. Use of technology in language learning	3.08	Agree	3
3. Use of technology in English teaching	3.14	Agree	1
Composite Mean	3.09	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 2 presents the summary on Digital Practices in ESL Teaching obtaining a composite mean of 3.09. The responses summarize ESL teaching's digital practices, highlighting technology tool utilization, their role in language learning, and specific applications in English instruction. All listed practices are agreed upon, with weighted means between 3.05 and 3.14, showcasing a positive attitude towards technology's impact in ESL contexts. The overall mean of 3.09 reinforces this consensus, with the greatest agreement on technology's critical contribution to improving both teaching approaches and educational results. All the indicators highlight the value placed on technology for enhancing teaching methodologies, providing diverse learning experiences, and facilitating student engagement and autonomy. They underscore the integral role of technology in modern ESL teaching, reflecting an evolving educational landscape that embraces digital tools to meet diverse learner needs and improve language learning outcomes.

As shown, the use of technology in English teaching is highlighted with the highest weighted mean of 3.14, ranking first among the evaluated digital practices. This indicates a strong agreement among respondents on the positive impact of technology in English teaching. The high rank underscores the critical role technology plays in enhancing teaching methodologies, facilitating interactive and engaging learning experiences, and supporting the diverse needs of ESL learners. It reflects a broad consensus on the value of integrating digital tools into the curriculum to improve teaching effectiveness and learning outcomes in ESL education.

This result can be supported by various research findings and expert opinions on the benefits of integrating technology in ESL classrooms. These reasons emphasize the transformative impact of digital tools on language learning, addressing diverse learner needs, enhancing engagement, and improving language proficiency. Educational technology, such as VR, AR, and individualized learning platforms, had been discovered as it became increasingly common, offering new ways to engage ESL learners and potentially speeding up the language learning process (Shadiev, et. al., 2020). Technology provided access to a vast range of authentic materials online, allowing learners to experience real-life language use, which is crucial for developing listening and comprehension skills (Utami et al., 2021).

Interactive activities, such as using translation apps, not only present new vocabulary but also build rapport with students, giving them more agency in their language education process (Matsumoto, 2021). Tools designed for English language learners offer immersive, self-directed experiences that improve language skills across all levels, catering to various literacy needs (Tang, 2023). Online language learning apps and programs serve as enrichment tools, supplementing classroom lessons with extra practice opportunities for students functioning above grade level. Use of videos and podcasts exposes students to natural English speech, while creation tools encourage active language use and authentic communication experiences. Integrating educational video games and interactive activities has been shown to significantly increase student engagement and literacy skills, making learning more enjoyable and effective. Technology enables connections with English speakers worldwide, offering invaluable practice opportunities and exposure to diverse accents and cultural contexts.

Digital tools facilitated immediate feedback and assessment, helping learners understand their progress and areas for improvement in real-time (Elmahdi et al., 2018). Integrating technology in ESL teaching also develops digital literacy skills, preparing students for the digital demands of the modern world. The integration of technology not only enhances the learning experience but also equips learners with essential skills for academic and professional success in a globally connected, digital world.

Use of technology tools is provided with a weighted mean of 3.05, indicating an overall agreement with its importance in ESL teaching. Ranking second among the indicators, it highlights the positive perception of employing various technology tools in the educational process. This suggests that educators acknowledge the value of integrating digital tools into their teaching strategies to enhance learning experiences, facilitate access to resources, and support diverse learning styles. The agreement level underscores the role of technology tools in modernizing ESL education and making it more interactive and accessible to learners.

That ranking reflects that technological tools offer a wide range of functionalities that can be tailored to different aspects of language learning, from vocabulary acquisition to pronunciation practice. Their accessibility enhances learning opportunities outside the traditional classroom setting. The interactive nature of many technology tools, such as apps and online platforms, significantly increases student engagement. Interactive lessons that utilize technology can be more appealing and memorable than traditional methods. Digital tools cater to various learning preferences, allowing for a more inclusive education approach. Visual learners, for instance, can benefit from video content, while auditory learners can take advantage of podcasts and audio resources. Many technology tools facilitate collaboration among students, whether through shared projects on cloud platforms or interactive exercises in virtual classrooms. This collaborative environment can enhance communication skills and cultural awareness among learners. Technology tools often provide immediate feedback, allowing students to recognize their mistakes and correct them in real-time. This feature is crucial for language learning, where immediate correction can significantly impact the learning curve. The vast array of resources available through technology tools, including online dictionaries, language learning apps, and educational videos, provides learners with a wealth of materials to support their studies. Technology allows for the personalization of learning experiences, enabling teachers to adapt materials and activities to the needs and progress of individual students or groups. Beyond language skills, technology tools help develop digital literacy, critical thinking, and problem-solving skills, preparing students for the demands of the modern, digital world.

The second rank among technology tools reflects a balance between recognizing their transformative impact on ESL teaching and learning and acknowledging that their effectiveness is part of a broader educational strategy that includes other critical components, such as direct teacher-student interaction and the use of traditional teaching methods. This second most valued indicator for ESL teaching is supported by a wealth of literature highlighting the multifaceted benefits of integrating digital tools in language learning environments. These benefits span from enhancing learner engagement to offering personalized learning experiences, thereby justifying its prominent position. Digital tools have been revolutionizing the language learning landscape by blurring the lines between formal and informal learning environments, enabling seamless integration of learning experiences across different contexts (Li, et. al., 2022). The use of new technologies in language learning, including AI and multimedia tools, has been shown to significantly increase student engagement and motivation, making learning more accessible and enjoyable Digital tools offer a platform for applying constructivist and socio-cultural learning theories, enabling educators to design learning experiences that cater to the diverse needs and learning styles of students (Kumi-Yeboah et al., 2020). AI tools, including natural language processing (NLP) algorithms and chatbots, provided personalized and efficient learning experiences, offering immediate feedback and enabling the simultaneous learning of multiple languages (De la Vall, et. al., 2023).

The convergence of these factors illustrates why the use of technology tools holds a crucial position in ESL teaching strategies. By leveraging digital tools, educators can create a more dynamic, interactive, and customized learning environment that not only aligns with contemporary educational needs but also prepares students for a globally connected world. These insights, drawn from current research and practice, affirm the value and impact of integrating technology tools in language education, supporting their prioritization in ESL teaching methodologies.

Moreover, the use of technology in language learning as indicator 2, with a weighted mean of 3.08, signifies an agreement on its importance in the ESL teaching process, ranking third among the indicators. This indicates a positive perception among educators regarding the integration of technology in language learning, recognizing its

role in facilitating more effective, engaging, and personalized learning experiences. The agreement level highlights the recognition of technology as a crucial tool in enhancing language acquisition, offering diverse and flexible learning opportunities, and supporting the diverse needs of ESL learners. The ranking of "Use of technology in language learning" as the last indicator in Table 9 may be attributed to several factors when compared to the other indicators in the table. The last ranking does not diminish the importance of technology in language learning but rather highlights the complexity and diversity of factors educators consider when integrating technology into their teaching practices. It suggests a nuanced understanding of technology's role, emphasizing targeted and effective use over general application. Educators may not always be adequately prepared or trained to integrate technology effectively in their teaching practices (Alqahtani et al., 2023). The challenge of aligning technology with pedagogical goals and ensuring that it supports language learning objectives rather than distracts from them (Pratolo, et. al., 2021). While technology can enhance engagement, misalignment with student interests or levels can have the opposite effect. These challenges highlight the need for a balanced and thoughtful approach to integrating technology in language learning, emphasizing the importance of addressing these issues to leverage the full potential of digital tools in enhancing language education.

Table 3
Summary Table on Transformative Implications

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Self-directed teaching motivation	3.17	Agree	1.5
2. Self-directed metacognitive strategies	3.17	Agree	1.5
3. Teaching anxiety related to technology	2.81	Agree	3
Composite Mean	3.05	Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree

Table 3 shows the summary of responses on transformative implications with a composite mean of 3.05. As evidenced from the findings, there are three indicators such as self-directed teaching motivation, self-directed metacognitive strategies, and teaching anxiety related to technology. Each indicator is assigned a weighted mean falling within the "Agree" range, alongside their respective ranks.

Among the top-ranked items, teachers agreed that they have self-directed motivation and self-directed metacognitive strategies, both with a weighted mean of 3.17. These results imply that teachers have enough motivation to direct themselves to good teaching and they also have self-directed metacognitive strategies. They have the initiatives to do what is expected of them as teachers.

Self-directed teaching motivation likely ranks first due to its importance in enabling teachers to take initiative in their professional development and adapt their teaching methods to meet the needs of their students more effectively. This indicator suggests that when teachers are motivated to direct their learning and teaching strategies, they are better equipped to navigate the challenges of ESL teaching, including the integration of technology and innovative pedagogical approaches. The ranking implies that self-motivation in teaching directly influences the effectiveness and adaptation of teaching practices in the ESL context, highlighting its significance over other considered factors. This aligns with the principle that teaching beliefs and attitude towards teaching significantly predicted motivation to teach. The self-efficacy was seen to have a mediating role in the interplay between teaching beliefs, attitude towards teaching and motivation to teach (Bas, 2021).

The respondents who consider that self-directed metacognitive strategies are of significance also ranks first with a weighted mean of 3.17 showing that digital technologies provide opportunities for enhanced reflection, planning, self-regulation, continuous learning, collaboration, and diversification of instructional strategies. Digital tools offer vast resources and data analytics, enabling teachers to reflect on their teaching practices more deeply and plan lessons more effectively. With access to real-time feedback and student performance data, teachers can adjust their strategies to better meet learners' needs. Technology can also support teachers in setting goals, monitoring their progress, and evaluating the outcomes of their teaching strategies. The study by Sinclair et al. (2020) demonstrated that real-time feedback facilitated by technology can lead to improvements in instructional practice. The dynamic nature of digital technology encourages teachers to continuously update their skills and

knowledge which is a core component of metacognitive strategies.

Furthermore, through online communities and professional networks, ESL teachers can share experiences, strategies, and insights, thereby reflecting on their own practices and learning from peers. The array of digital tools and resources available allows teachers to experiment with different instructional strategies, from blended learning models to game-based learning and beyond. This experimentation is a metacognitive process, requiring teachers to think about how they think about teaching and how different approaches might affect their students' learning. The integration of digital technology in teaching is challenging which requires metacognitive awareness and the ability to adapt one's teaching strategies to incorporate new technologies effectively. In the digital setting, educators frequently face a wider range of changing scenarios than previously encountered, necessitating the need for adaptive metacognitive skills (Lin et al., 2018).

Meanwhile, obtaining a weighted mean of 2.81, as an implication, teachers agreed they had teaching anxiety related to technology. It means that teachers recognize that they experience being worried or anxious of using technology in teaching, but it is perceived to be the lowest in rank. Educational technology has become an increasingly important element for improving the teaching and learning process of students. To achieve these goals, it is essential that teachers have the skills they need to be able to introduce technology into their teaching practice. However, this is often overwhelming and stressful for many of them. Findings show that teachers present high levels of anxiety or stress due to their use of educational technology in the classroom.

Table 4

Relationship Between Digital Literacy and Digital Practices in ESL Teaching

Digital awareness	rho-value	p-value	Interpretation
Use of technology tools	.748**	0.000	Highly Significant
Use of technology in language learning	.660**	0.000	Highly Significant
Use of technology in English teaching	.652**	0.000	Highly Significant
Teaching Innovation			
Use of technology tools	.730**	0.000	Highly Significant
Use of technology in language learning	.622**	0.000	Highly Significant
Use of technology in English teaching	.597**	0.000	Highly Significant

Legend: Significant at p-value < 0.01

Table 4 shows the association between Digital Literacy and Digital Practices in ESL Teaching. The computed r-values indicates a moderate direct correlation and the resulted p-values were less than the alpha level. This means that there was significant relationship existing and implies that the better is the digital literacy, the better are the digital practices.

Digital Literacy and practices have highly significant relationship in the aspect of digital awareness as revealed in the computed p-value of 0.000 specific to use of technology tools, use of technology in language learning and use of technology in English teaching which implies that better digital awareness correlates with more effective use of technology tools, and its application in language learning and English teaching. The teacher-respondents have good digital literacy and it is manifested in their practices when they are in their English classrooms. Truly, technology is there to facilitate and aid language teaching. Language teaching can be enhanced by effective uses of educational technology. This study corresponds with the findings of Cote and Milliner (2018), revealing that language teachers acknowledges their recognition of the positive impact these skills have on their profession, with a majority eager to enhance their digital literacy and application in educational settings for improved teaching outcomes.

Conversely, Several scholars maintain that the mere capability to operate a specific technological tool does not automatically equip a teacher with the insights necessary for its optimal incorporation into language education. This distinction emphasizes the need for a deeper understanding and strategic approach to technology integration beyond basic usage skills (Scherer et al., 2019).

The use of information technology is linked to ethical awareness. It involves upholding ethical norms and

values when using information and technology, which means grasping the consequences of digital actions, valuing privacy, verifying the reliability of information shared or utilized, crediting sources to avoid plagiarism, and employing information technology considerately towards everyone. It is crucial for navigating the complex ethical landscapes presented by the digital age, promoting responsible and respectful information use. Information literacy stresses the need for individuals to consider the impact of their information-related actions on society and individuals, advocating for the principled use of digital resources and technologies. In their recent study, Cahill et al. (2020) stated educators utilizing technology in teaching need to not only grasp and possess technological skills but also make decisions with ethical and moral consciousness, in addition to understanding the academic functions of their institution. This viewpoint is consistent with the research conducted by Mardiana (2021), which underscored the significance of integrating ethical dimensions into the appropriate utilization of technology for educational objectives.

There is also a highly significant relationship between Digital Literacy and Digital Practices in ESL Teaching in the aspect of teaching innovation. The stronger a teacher's awareness of information literacy, the greater their innovative teaching ability. This is because information literacy encompasses not only the ability to use technological tools but also includes critical thinking, problem-solving, and the innovative application of technology. A high level of information literacy helps teachers integrate and apply new technologies more effectively in their teaching, leading to innovative teaching methods, improved quality of teaching, and enhanced student learning experiences. Guaqueta, et. al., (2018) discovered that utilizing a mixed-methods strategy through language learning applications can significantly enhance vocabulary acquisition. Moreover, awareness of information literacy encourages teachers to continuously learn and explore new educational technologies and resources, increasing the interactivity and engagement of teaching activities.

Digital practices, including blended learning, have revolutionized ESL teaching by compelling educators to adapt to an ever-evolving environment and fostering instructional innovation. These practices not only expand the traditional classroom boundaries but also enhance learning experiences by integrating technology, thereby offering flexible, interactive, and personalized learning opportunities. This transformation encourages teachers to explore new pedagogical approaches, ensuring that education remains relevant and responsive to the needs of learners in a digitally connected world. Educators in second language learning must adapt to innovative literacy practices suited for digital and virtual learning environments. As new genres and tools emerge, offering diverse functionalities, their adoption and integration into education will inevitably increase, enriching the learning landscape (Kinshuk et al., 2016). With the advent of social tools into foreign and second language classrooms, educators are encouraged by Elola, et. al., (2017) to adopt innovative and dynamic literacy practices suitable for digital and virtual learning environments. The continuous emergence of novel genres and digital tools, each offering distinct advantages, is anticipated to further diversify and enhance the field of education, particularly in language learning.

Table 5
Relationship Between Digital Literacy in ESL Teaching and Transformative Implications

Digital awareness	rho-value	p-value	Interpretation
Self-directed teaching motivation	.652**	0.000	Highly Significant
Self-directed metacognitive strategies	.637**	0.000	Highly Significant
Teaching anxiety related to technology	.367**	0.000	Highly Significant
Teaching Innovation			
Self-directed teaching motivation	.564**	0.000	Highly Significant
Self-directed metacognitive strategies	.558**	0.000	Highly Significant
Teaching anxiety related to technology	.395**	0.000	Highly Significant

Legend: Significant at p-value < 0.01

Table 5 shows the relationship between digital literacy in ESL teaching and transformative implications, focusing on digital awareness and teaching innovation. The computed r-values indicates a strong direct correlation and the resulted p-values were less than the alpha level. Results shows that there was significant relationship exists and implies that the more the digital literacy, the more observed are impications transformatively. The analysis

reveals highly significant correlations, indicated by rho-values and p-values at 0.000, suggesting a strong link between digital literacy components and transformative educational practices. It examines how these factors correlate with self-directed teaching motivation, self-directed metacognitive strategies, and teaching anxiety related to technology. The globalization has affected every sphere of the life including education. In spite of availability of ICT infrastructure in schools, their potential is underutilized because of digital incompetence of the teachers. New digital technologies are acting as a catalyst towards improvement of learning outcome and enhancing quality of education, but only introduction of such technologies in schools for producing change and innovation is not enough, it requires digitally competent teachers to facilitate the use of ICT in education.

To delve deeper, there is a close relationship between digital awareness and teaching motivation. The present age is the age of information in which teachers will act as facilitators and mentors to students to lead them towards problem solving and innovation to meet the new challenges of globalization. Teachers must be able to create learning environments which are student centric and foster creativity, metacognition, meta-literacy, collaboration and communication in learners. Mere superficial use of ICT in teaching will not yield the required learning outcome, but the integration of ICT in pedagogy is important to enhance teaching, learning process. Strong digital awareness in teachers means they understand how to utilize digital technology to enhance teaching effectiveness, which can boost their confidence and motivation in teaching. Teachers with high digital awareness can explore and apply new teaching tools and methods, stimulating students' interest in learning and increasing their own satisfaction and innovation in teaching, thereby enhancing teaching motivation. Thus, enhancing teachers' digital awareness is key to improving teaching quality and motivation.

In addition, digital awareness and metacognitive strategies in teachers are closely intertwined, as both play crucial roles in the educational process. Digital awareness enables teachers to effectively integrate technology into their teaching, fostering a more engaging and dynamic learning environment. This, in turn, enhances their metacognitive strategies by allowing them to reflect on, monitor, and adjust their teaching approaches based on real-time feedback and digital tools' capabilities. Conversely, well-developed metacognitive strategies empower teachers to make more informed decisions about when and how to incorporate digital tools, optimizing learning outcomes. Together, these elements create a symbiotic relationship that drives educational innovation and effectiveness. Drawing from the insights provided by King (2011), it is part of a teacher's duty to foster the development of their students' cognitive skills and teach them to analytically assess information across different mediums and to make informed, responsible choices.

Teaching a lesson encompasses more than just delivery; it involves careful planning, ongoing monitoring, and thorough assessment. Teachers must dive deep into relevant information in their area, organizing and comprehending content on a more profound level (Yilmaz, et. al., 2017). As they were exploring the extensive online information, educators have the responsibility to decode, critically evaluate, and amalgamate a wide range of written content and multimedia from different origins (Learning Forward, 2017).

Furthermore, digital awareness and the anxiety associated with information technology are interlinked, as an understanding of digital tools and platforms can significantly impact an individual's comfort and stress levels when using technology. Kuek, et. al.,(2020) found that lower levels of digital literacy might lead to increased anxiety related to the use of digital technologies. Enhanced digital awareness can alleviate anxiety by providing individuals with the knowledge and skills needed to navigate digital spaces confidently. This confidence stems from a familiarity with digital systems, leading to a more adaptive and proactive approach to technological challenges. Conversely, a lack of digital literacy can increase anxiety, as individuals may feel overwhelmed and incompetent in the face of rapidly evolving technological demands for the fear of errors and misunderstanding in digital tasks. This anxiety can create a barrier to learning and using new technologies, further widening the digital divide. Upon analyzing the data, Katsarou (2021) determined that students possessing a sufficient level of digital literacy skills tend to experience higher satisfaction across all elements of the online portion of blended learning courses.

Table 6 presents the association between digital practices in ESL teaching and transformative Implications.

The computed r-values indicates a strong direct correlation and the resulted p-values were less than the alpha level. Results shows that there a highly significant relationship exists and implies that the better is the digital practice, the better is the transformative implications. The use of technology tools, use of technology in learning and use of technology in English teaching are greatly connected as impacts to teachers. If teachers have good practices in the classroom, there will be good effects to students. According to Nugroho,et. al., (2020), digital learning activities could bring a positive effect on their students' enjoyment, help to inspire learners' motivation and improve their performance. At the same time, if teachers are not knowledgeable and confident about their practices, then it can also affect in the learning behavior or outcome in the classroom. Digital tools can enhance teachers' ability to deliver engaging and effective instruction, potentially increasing their motivation by enabling more innovative teaching methods, facilitating personalized learning, and providing new ways to assess student understanding.

Table 6
Relationship Between Digital Practices in ESL Teaching and Transformative Implications

Use of technology tools	rho-value	p-value	Interpretation
Self-directed teaching motivation	.727**	0.000	Highly Significant
Self-directed metacognitive strategies	.696**	0.000	Highly Significant
Teaching anxiety related to technology	.424**	0.000	Highly Significant
Use of technology in language learning			
Self-directed teaching motivation	.680**	0.000	Highly Significant
Self-directed metacognitive strategies	.674**	0.000	Highly Significant
Teaching anxiety related to technology	.441**	0.000	Highly Significant
Use of technology in English teaching			
Self-directed teaching motivation	.774**	0.000	Highly Significant
Self-directed metacognitive strategies	.679**	0.000	Highly Significant
Teaching anxiety related to technology	.366**	0.000	Highly Significant

Legend: Significant at p-value < 0.01

It has been observed by Beardsley et al. (2021) that teachers' assurance in leveraging technology for lesson planning, class instruction, academic evaluation, feedback providing, and communication with students and their families has concurrently escalated with their drive to improve digital proficiencies and implement digital tools in pedagogical contexts. Lawrence, et. al., (2018) demonstrated that the perspectives of teachers greatly influence their readiness and capability to adopt Information and Communication Technology in their instructional methods. Jung, et. al., (2018) underscored that self-confidence, the presence of the teacher, and the value seen in educational tools are pivotal in driving student participation. A study conducted by Jääskelä et al.(2017) corroborated the correlation teachers' positive attitudes and beliefs and technology integration. Barton, et. al., (2020) suggested a positive correlation between instructors' confidence in their abilities and the effective incorporation of technology in teaching. They argued that enhancing this self-efficacy among teachers could lead to improved quality in technology integration within educational settings.

Digital practices significantly influence teachers' metacognitive abilities by enhancing their awareness and control over their teaching strategies. Engaging with digital tools and environments requires teachers to continuously evaluate, plan, and adjust their instructional methods, fostering a reflective practice that deepens their understanding of how students learn. This process not only improves teachers' ability to select and use digital resources effectively but also encourages a mindset of lifelong learning and adaptation to new educational technologies. Through digital practices, teachers develop a more nuanced approach to monitoring their teaching effectiveness and making informed decisions to optimize student learning outcomes. Based on insights from Wiedbusch et al. (2021), certain digital tools served both as monitoring and instructional aids, enhancing teachers' efficiency and precision in overseeing their teaching processes and refining their instructional strategies. Thus, the adoption of new communication practices through digital tools transcends basic technical skills, as argued by Lankshear, et. al., (2008). This evolution encompassed the cultivation of a distinct mindset, further elaborated by Knobel, et. al., (2007), indicating a deeper intellectual engagement with technology beyond mere functionality.

Lastly, there are significant relation between digital practices and Teaching anxiety related to technology. Digital practices are very important and the study by Røkenes, et. al., (2016) showed that future ESL teachers

should be prepared in teacher education to stimulate pupils' language learning in schools through integration of ICT. However, digital practices can both mitigate and induce teacher'anxiety related to digital technologies. On one hand, regular engagement and familiarity with digital tools through practical use can reduce anxiety by building competence and confidence. On the other hand, the rapid pace of technological change and the pressure to stay updated with new digital tools and platforms can increase anxiety. This is aligned with the conclusion by Henderson, et. al.,(2021) that anxiety interacting with various other factors with other variables was found to influence technology adoption.

In essence, the findings highlighted the critical importance of integrating digital tools in ESL teaching for enhancing instructional effectiveness and teacher confidence. The high correlation values suggest that effective use of technology not only supports teaching innovation but also plays a significant role in alleviating concerns associated with technology use in educational settings.These outcomes advocate for continued professional development in digital literacy for ESL teachers, aiming to further empower them in their teaching practices and support their adaptation to the evolving demands of digital education.

4. Conclusions and recommendations

Majority of the respondents are 30-50 years old, female, teaching for 10 years below and with master's degree. Respondents have assessed themselves to have good digital literacy in ESL teaching. Respondents have use good digital practices in teaching ESL. In terms of transformative implications, teachers are self- directed in terms of motivation and strategies and gained technology anxiety in teaching ESL. Age, sex, years of teaching and highest educational attainment do not pose significant difference in terms of digital literacy, practices and digital transformations except sex that has significant difference on digital awareness. Digital literacy is highly significantly related to digital practices and transformative implications. A faculty development program is proposed to improve the digital skills of ESL teachers.

Universities may consider designing regular or routine faculty development trainings focused on technology use in the classroom as a refresher or updating mechanism for teachers. Teachers may consider enrolling themselves in additional or refresher courses on technology use and have a periodic self-assessment of their technological skills. English coordinators may conduct studies on the needs of their teachers and students in terms of the use of technology and strengthen their support to the teaching personnel. The proposed faculty development program for improved digital skills of teachers may be reviewed, implemented and evaluated. Future researchers may investigate on the advantages or disadvantages posed in the use or overuse of technology in teaching and on other related variables not included in the study.

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