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Teaching in a Digital Era: Investigating the Relationship between Digital Competence and Work Engagement among EFL Teachers in Türkiye



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Abstract

This study investigates the relationship between English as a Foreign Language (EFL) teachers' digital competence and work engagement within technology-mediated instructional contexts. Addressing a gap in the literature, the study draws on the Digital Engagement Competence (DEC) framework as an integrative lens that views digital competence as a key professional resource associated with teacher engagement. A mixed-methods design was employed. Quantitative data were collected from 150 EFL teachers in Türkiye and analyzed using descriptive and correlational statistics, while qualitative data obtained through semi-structured interviews with 10 teachers were examined via thematic analysis. The findings revealed moderate levels of digital competence alongside high levels of work engagement, with a statistically significant positive relationship between the two constructs. Qualitative results further indicated that teachers perceived digital competence as being associated with greater professional confidence, instructional flexibility, and engagement in technology-enhanced teaching environments. The study contributes to the field by examining digital competence as a multidimensional and dynamic professional resource associated with teacher engagement in technology-mediated learning environments. The findings underscore the importance of integrated teacher development approaches that simultaneously foster technological competence and professional engagement in digitally-mediated learning environments.

Keywords: digital competence, work engagement, EFL teachers, Digital Engagement Competence, technology integration

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Introduction

Due to the rapid digitalization of education, traditional teaching methods have undergone a transformation, and educators have continually evolved their pedagogy to adapt to the changing landscape of teaching with technology (Godwin-Jones, 2018; Redecker, 2017). This shift in pedagogy is particularly evident in English as a Foreign Language (EFL) environments, where educators increasingly utilize digital technology for authentic communication, authentic input, and learning experiences that occur beyond the classroom (Reinders & Benson, 2017). While digital resources make it possible for students to access materials via digital media, research indicates that successfully integrating technology requires more than just having access to the technology. Instead, the success of technology in the classroom depends upon teachers' ability to effectively make informed, pedagogical decisions about the use of technology (Howard & Tondeur, 2023). This means that teachers require the ability to create instructional experiences that are meaningful, interactive, and student-centered—they need more than to simply have knowledge of how to operate a computer or any other piece of technology.

Within this context, digital competence has become a vital aspect of a teacher's professional capabilities in today's digital society; however, it is not just the ability to operate technology. Digital competence has a larger scope and contains more than operational capabilities. Digital competence includes pedagogical, ethical, and evaluative dimensions of technology use in education (Krumsvik, 2012; Redecker, 2017). The European Framework for the Digital Competence for Educators (DigCompEdu) framework provides a holistic approach to defining teacher's digital competence by including professional engagement, digital resources, pedagogy, and assessment and learner empowerment. However, there is empirical evidence to support the contention that an increase in technology access will not always lend itself to effective implementation of pedagogy with technology (Petko et al., 2018; Tondeur et al., 2017). This suggests that digital competence is dynamic and evolves in response to changing teaching environments and institutional support systems (Instefjord & Munthe, 2017).

These contextual factors profoundly impact learning and pedagogy, especially in non-Western educational settings such as Türkiye. The FATİH (Movement to Enhance Opportunities and Improve Technology) Project in Türkiye is just one of several large-scale projects that have brought significantly improved technological infrastructure (Ministry of National Education [MoNE], 2023). However, multiple studies suggest that providing access alone does not guarantee meaningful or sustainable pedagogical use of technology (Türel, 2012; Yıldız, 2021). Institutional support, teacher preparedness, and professional development opportunities all influence how digital technologies are integrated into classroom instruction, particularly in EFL contexts where interaction and engagement are central to learning (Hampel & Stickler, 2012). These studies highlight the importance of examining digital competence within its broader organizational and contextual environment.

In educational settings where technology is used to facilitate learning, the relationship between digital competence and teachers' cognitive and emotional experiences has become increasingly influential in how successful teachers perform within classrooms. As teachers are expected to be more flexible, confident, and professionally resilient while navigating the complexities of digitally enhanced instruction (Skaalvik & Skaalvik, 2017), a growing body of research has identified work engagement—characterized by vigor, dedication, and absorption (Schaufeli et al., 2006)—as a key factor influencing instructional effectiveness, classroom climate, and student achievement (Greenier et al., 2021). The Job Demands–Resources (JD-R) model provides a relevant conceptual framework for understanding the relationship between teachers' work engagement and their ability to meet the demands associated with providing effective instruction, as it conceptualizes the maintenance of teachers' work engagement as being supported by the availability of sufficient resources to meet the instructional demands placed on them, including workload, uncertainty, and complexity associated with technology-related

instruction (Bakker & Demerouti, 2007; Collie, 2023). Within this context, digital competence can be understood as an essential professional resource for promoting the continued engagement of teachers who utilize technology-enhanced instructional practices.

While digital competence and work engagement have received growing interest, research on these concepts has largely been conducted in isolation, and little research has focused on the relationship between the two concepts, particularly in non-Western EFL contexts (Bozkurt et al., 2021; König et al., 2020). This lack of attention to their interaction indicates the need for integrated approaches that address how technology, motivation, and context interact in real-world classrooms.

In response to this need, the present study draws on Digital Engagement Competence (DEC) as an integrated conceptual framework. Rather than introducing a novel psychometric construct, DEC is used as an interpretive framework for understanding how teachers' digital competence interacts with motivational and contextual resources in technology-mediated EFL instruction. In addition, the study makes three contributions. The first contribution is the provision of empirical evidence regarding the relationship between digital competence and work engagement within non-Western EFL settings. The second contribution is the application of DEC as an integrative conceptual framework that brings Dig-CompEdu, the JD-R model, and work engagement theory into dialogue. The third contribution is an extensive overview of how digital competence is incorporated and sustained through a convergent mixed-methods design in actual classroom settings. Accordingly, this study investigates the relationship between EFL teachers' digital competence and work engagement, with particular attention to the role of digital competence as an ongoing professional resource in technology-mediated instructional contexts.

Research Questions

This study aims to investigate the relationship between EFL teachers' digital competence and their work engagement in technology-mediated instructional contexts. In particular, it explores the role of digital competence as a professional tool that facilitates motivational, emotional, and instructional involvement of teachers. This research uses the following research questions:

1. What is the level of EFL teachers' digital competence and work engagement?
2. Is there a significant relationship between teachers' digital competence and their work engagement?
3. Do teachers' demographic characteristics (e.g., age, teaching experience) influence their levels of digital competence and engagement?
4. How do teachers describe their experiences of digital competence and engagement in their professional practice?

Review of Literature

Digital Competence in EFL Education

Digital competence has gradually become a key component of contemporary teacher professionalism, not merely technical proficiency but also the pedagogically informed design, implementation, and evaluation of technology-mediated teaching (Krumsvik, 2012; Redecker, 2017). This broad concept of digital competence is especially important in the EFL setting, where interaction, authentic input, and feedback are critical to language development, allowing teachers to take learning opportunities out of the limits of the traditional classroom (Reinders & Benson, 2017).

In this regard, digitally competent teachers not only use technology but also integrate it strategically to promote communicative practices, communication with learners, and feedback (Mishra & Koehler,

2006; Redecker, 2017). Consequently, this pedagogically-based integration has been linked to greater learner autonomy, differentiated instruction, and intercultural awareness, which are major goals in EFL education (Byram, 1997; Godwin-Jones, 2018; Little, 2007). However, despite these promising findings, the literature also states that the effect of digital competence is not universal and highly context-dependent. In particular, studies conducted in Türkiye and other countries indicate that the availability of institutional support, professional development possibilities, and workload conditions play a significant role in determining whether or not it is possible to transfer the digital competence into meaningful pedagogical practice (Althubyani, 2024; MoNE, 2023; Sary et al., 2023; Turel, 2012; Yildiz, 2021). Similarly, research published in *Technology in Language Teaching & Learning* has emphasized the importance of ICT-related professional development in supporting EFL teachers' effective integration of digital technologies into classroom practice (Jamil et al., 2024).

This context-dependent nature is further supported by findings that teachers with similar levels of digital competence usually exhibit significantly different instructional patterns (Petko et al., 2018; Tondeur et al., 2017). Such inconsistencies suggest that digital competence alone does not necessarily lead to pedagogical innovation. Rather, its effective implementation appears to depend on a range of contextual and professional factors. In this regard, recent research has started to redefine digital competence as a sociotechnical phenomenon beyond individual capabilities to encompass ethical awareness, digital citizenship, and critical approaches to emerging technologies like Artificial Intelligence (Selwyn, 2022; Williamson & Hogan, 2020). Although theories like DigCompEdu offer an inclusive framework of the digital abilities of teachers (Redecker, 2017), they provide little information on how these abilities are implemented, maintained, and transformed in actual classroom contexts. Thus, an important gap in the literature concerns the conditions under which digital competence contributes to sustained and meaningful instructional engagement.

Teachers' Work Engagement and Technology Integration

Teacher work engagement, typically defined through the dimensions of vigor, dedication, and absorption, has been consistently associated with instructional quality, teacher well-being, and student achievement (Bakker & Demerouti, 2008; Greenier et al., 2021; Schaufeli et al., 2002). While earlier research primarily conceptualized engagement as an individual psychological state, more recent studies emphasize its contextual and relational nature, particularly in technology-mediated learning environments where instructional demands are continuously evolving (Collie, 2023; Skaalvik & Skaalvik, 2017).

From a theoretical perspective, the JD-R model provides a robust framework for understanding how engagement is sustained or diminished in such environments. According to this model (Bakker & Demerouti, 2007; Bakker et al., 2014), engagement can develop when adequate job resources are available to meet job demands, whereas an imbalance between demands and resources may lead to strain or disengagement. When looking at digitally-mediated environments for teaching, the balance among the competing demands becomes increasingly complicated. Technology is often a resource that facilitates innovation, interaction, and efficiency, while at the same time the continual demands and uncertainties that come from using technology can create additional stress and increase teachers' workloads (Skaalvik & Skaalvik, 2017; Tarafdar et al., 2007). As such, the way in which technology impacts engagement must be viewed through two lenses: the teachers' perceptions of their teacher efficacy and the context of support available to them in the use of technology (Tondeur et al., 2017).

Research has shown that many factors influence the relationship between teachers' digital competence and their engagement with and usage of technology in their classrooms. For example, many studies have found that teachers who have higher levels of digital competence and self-efficacy are likely to

report higher levels of engagement, professional satisfaction, and willingness to try new methods of teaching (Howard & Tondeur, 2023; Wang & Pan, 2023). This suggests that digital competence may provide teachers with an important resource that helps them cope with the demands of technology. However, other studies have also shown that the relationship between digital competence and engagement is not always linear. Some studies suggest that contextual and psychological factors, such as institutional support, autonomy, and opportunities for professional development, also play a significant role in determining teachers' willingness to engage with and utilize technology on a daily basis (Collie, 2023; Tondeur et al., 2017; Xie et al., 2021). This suggests that technological competence alone does not guarantee sustained engagement. Rather, teachers' engagement appears to be shaped by a combination of contextual, organizational, and interpersonal factors that influence both their teaching practices and their use of technology. While these studies generally support a positive relationship between digital competence and engagement, they also reveal important inconsistencies regarding the strength and nature of this relationship. Collectively, the evidence suggests that digital competence alone may be insufficient to sustain engagement, highlighting the importance of contextual and organizational factors in technology-mediated teaching.

When teachers are teaching EFL, this situation is further complicated by the fact that language instruction is both social and interactive. As a medium of providing access to the content, technology also allows for communication, feedback, and ultimately, student engagement (Godwin-Jones, 2018; Hampel & Stickler, 2012). Therefore, student engagement is more closely related to the pedagogical use of technology (e.g., interaction and facilitating engagement) than the technological or instrumental (Greenier et al., 2021; Redecker, 2017).

A major limiting factor in the research that has been conducted to date is that it has treated digital competence and work engagement as separate constructs. These constructs have been studied in detail separately, but the overall relationship between them remains unexplored in the context of non-Western EFL (Bozkurt et al., 2021; König et al., 2020). This fragmentation results in an incomplete understanding of how technology, motivation, and context together shape teachers' experience of their profession.

Digital Engagement Competence (DEC) Framework

The fragmented exploration of digital competence and work engagement in the literature points to the need for an integrated perspective capable of capturing the relationship between these constructs within technology-mediated educational contexts. In response to this need, the present study proposes DEC as an integrative conceptual framework that brings together insights from digital competence, work engagement, and job resources literature. Rather than representing a new psychometric construct, DEC serves as an interpretive lens for understanding how digital competence and engagement may interact within educational settings (Collie, 2023; Howard & Tondeur, 2023; Tondeur et al., 2017).

The DEC framework is based on three complementary theoretical frameworks (see Figure 1). The European Framework for the DigCompEdu describes how digital competencies are developed through technological, pedagogical, and professional uses of technology and the impact these have on the learner's ability to effectively use technology within pedagogical contexts (Redecker, 2017). The JD-R model provides an understanding of how work engagement is sustained through the relationship between job demands and available resources and emphasizes the role of personal resources and contextual resources in creating professional engagement (Bakker & Demerouti, 2007; Breevaart et al., 2014). Work engagement theory describes the multidimensional nature of engagement as it relates to a person's level of vigor, dedication, and absorption when fulfilling their role in the workplace (Schaufeli et al., 2002; Schaufeli et al., 2006).

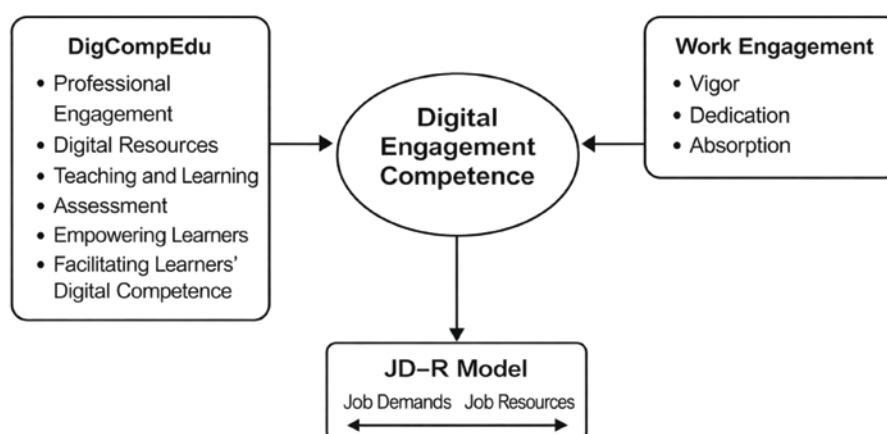


Figure 1. *Conceptual Model of Digital Engagement Competence (DEC)*

Note. Adapted from Bakker & Demerouti, 2007; Redecker, 2017; Schaufeli et al., 2006.

Importantly, DEC should not be regarded as a measurable construct; rather, it serves as an analytical framework to help interpret empirical results. The distinction draws a clear line between the contribution of this study as conceptual integration (rather than scale development) and ensures that DEC is used as a theoretical lens to help understand how digital competence exists within the wider engagement process.

The Current Study

The current study builds on the DigCompEdu framework (Redecker, 2017) and the JD-R model (Bakker & Demerouti, 2007) to examine the relationship between EFL teachers' digital competence and their work engagement. Although these constructs have usually been investigated in the past separately, this study combines them using the concept of DEC which is conceptualized as an interpretive framework, but not as an independent psychometric construct. By doing so, the study explores how digital competence may be understood as both a pedagogical and professional resource associated with teachers' engagement in technology-mediated language teaching.

By concentrating on Turkish EFL, the research targets the scarcity of studies carried out in non-Western education, where the institutional factors, professional growth prospects, and technological systems can influence the digital practices of teachers in their own peculiar manner. With these contextual factors in mind, the study provides empirical evidence regarding the relationship between digital competence and work engagement and explores how technological, motivational, and contextual resources interact within digitally enriched classrooms.

Furthermore, there is a conceptual and practical contribution of the study. In theory, it builds the DEC framework as a prism through which to understand the dynamic play between digital competence and resources of engagement and institutional support. Practically, the findings can inform teacher training and school leadership to how they can facilitate effective, sustainable technology integration that influences teacher engagement and teacher instruction positively.

Method

Research Design

The present research used convergent mixed-method research design, which permitted the gathering and processing of both quantitative and qualitative data to acquire a full picture of the connection

between digital competence and work engagement of EFL teachers (Creswell, 2015). The quantitative section measured the overall levels and statistical relationships of the variables, and the qualitative one provided more details about the beliefs and emotions of the teachers and the circumstances under which they used the digital technologies. Following the literature on technology-mediated language teaching, the research was structured to show how the ideas of engagement and digital competence come into being in ordinary EFL classrooms, instead of considering them as conceptual entities (Hampel & Stickler, 2012). The combination of the two strands made it possible to interpret it in a more subtle way than it would have been with one methodological approach.

Participants

The quantitative phase included 150 EFL teachers from public and private schools in Mersin, Türkiye. Convenience sampling was employed, enrolling the participants on the grounds of their availability and willingness. The length of the teaching experience was between 2 and 25 years ($M = 10.3$), with the majority being female (69%). The teachers taught either primary, lower, or upper secondary, with most having a bachelor degree (85.3%) and the rest being postgraduate (14.7%). The national curriculum in Türkiye regulates EFL instruction, and the use of technology is increasingly demanded, and assessment, interaction, and feedback are prioritized (MoNE, 2023). Digital competence is, therefore, a significant element in the daily decision-making of instruction.

In the qualitative phase, 10 teachers were chosen through purposive sampling with maximum variation to achieve a variety of age, teaching experience, instructional level, and digital competence. Participants were required to be currently teaching EFL, and to have previous experience with integrating digital technologies. The level of digital competence was identified through the survey scores of the survey during the quantitative phase, so the teachers who had different degrees of digital competence were not left out. Semi-structured interviews gave first-hand descriptions of the issues and opportunities related to technology integration, allowing teachers to reflect on how digital competence contributes to their professional growth, motivation, and practice in technology-based EFL classrooms in the future. Even though the qualitative results provide insightful pedagogical data, they are placed in the context of Mersin and are not meant to be applicable to all EFL teachers in Türkiye.

Data Collection

Data collection was done in the 2024–2025 academic year. The analysis of quantitative data was carried out by use of online survey which was administered using school administrators and professional communication systems. Out of the total number of teachers who received the invitation to complete the survey ($N = 210$), 150 teachers took part in the survey voluntarily. The response rate was 71.4%. Although this rate is considered acceptable for educational survey research, the possibility of non-response bias cannot be completely ruled out, as teachers who chose not to participate may have differed from respondents in their levels of digital competence or work engagement. Two instruments were applied, the DigCompEdu-TR Scale (Redecker, 2017; Toker et al., 2021) with six dimensions with the scale rating options of 0 = Never, 4 = Always, and the Utrecht Work Engagement Scale (UWES-9; Schaufeli et al., 2006) with three dimensions and with response options ranging from 0 to 4. In line with Redecker (2017), the overall scores in DigCompEdu were defined based on the proficiency bands (A1–C2), and the average score of the participants was placed at the Integrator (B1) level.

The DigCompEdu-TR Scale assesses teachers' skills in professional engagement, digital resources, digitally supported pedagogy, assessment, learner empowerment, and facilitation of learners' digital competence. These areas were discussed with regard to EFL instructional practices, such as task design, feedback, interaction, and assessment. The UWES-9 Scale was used to assess the vigor, dedication, and

absorption of teachers, with an emphasis on prolonged emotional and cognitive interest in the use of technology in teaching. There was no form of forced participation and no personally identifiable information was obtained.

The semi-structured interviews were done in Turkish and took about 30 minutes each. The questions were centered on the teacher digital instruction, emotional reactions, motivation, and work engagement, such as how they incorporate digital technologies in EFL instruction, how technology can impact their motivation and engagement, the challenges they face and the support they receive, and how digital competence influences teaching decisions. The interview protocol was designed with reference to DigCompEdu, the JD-R model, and work engagement theory, as well as the constructs examined during the quantitative phase. Two specialists in EFL and digital pedagogy reviewed the protocol to make sure it was clear and relevant prior to data collection. They were all voluntary and informed consent was taken and confidentiality ensured. The Çağ University Ethics Committee approved the study and the Mersin Provincial Directorate of National Education gave official authorization of the research.

Data Analysis

Quantitative data were analyzed using SPSS 25.0 (Pallant, 2020). The data were screened for missing values, outliers, and normality (Field, 2024). The values of skewness and kurtosis of all variables fell between -1.5 and $+1.5$, which is acceptable (Tabachnick & Fidell, 2013). General levels of digital competence and work engagement were summarized using descriptive statistics. Independent samples *t*-tests were used to examine the gender, type of school, and level of education, and ANOVAs were used to examine the age group, teaching experience, and the level of instruction (Field, 2024; Pallant, 2020). Tukey post hoc tests were also used to investigate significant differences. Pearson correlation tests were carried out to establish the connection between digital competence and work engagement with a significance level cutoff of $p < .05$ (Cohen, 1988).

Qualitative data were analyzed using Braun and Clarke's (2006) six-phase thematic analysis. Verbatim transcripts were read multiple times to become familiar with them, and the preliminary codes were created based on phrases associated with digital competence, motivation, emotional reactions, and teaching activity. The codes were categorized into broader categories and developed into themes that were interpreted through the DEC framework proposed in this study. Interaction between engagement-related psychological resources and digital pedagogical practices in EFL classrooms was analytically focused. The coherence of the themes internally was verified and supported by direct quotes to ensure transparency. A second researcher checked a coding structure to enhance credibility and confirmability and resolved inconsistencies were discussed and resolved (Lincoln & Guba, 1985). Quantitative results were then synthesized with the results to ensure the interpretation could be triangulated and a deeper interpretation of the context could be reached. Given the relatively high correlations among some DigCompEdu dimensions, dimension-level findings were interpreted cautiously and primarily used to identify general patterns rather than establish distinct independent effects.

Findings

The descriptive statistics in Table 1 reveal that EFL teachers exhibited moderate levels of digital competence, corresponding to the DigCompEdu Integrator (B1) level. Teaching & Learning and Professional Engagement had the highest scores ($M = 8.41$, $SD = 3.73$; $M = 8.01$, $SD = 3.46$, respectively) as the teachers were moderately confident about using digital technologies in their professional tasks and teaching. On the contrary, Assessment ($M = 6.29$, $SD = 2.57$) and Empowering Learners ($M = 9.81$, $SD = 4.35$) scored relatively low, indicating lower levels of confidence in their ability to use digital tools to assess the student performance or provide learners with an opportunity to independently work with technology. Digital Resources ($M = 6.39$, $SD = 2.51$) and Facilitating Learners Digital Competence

($M = 6.45$, $SD = 2.66$) were in the moderate range. This shows the overall ability to select, adapt, and share digital materials, and support development of digital skills in students.

Work engagement scores were moderate to high, with Dedication showing the highest mean score ($M = 13.47$, $SD = 3.93$), followed by Vigor ($M = 12.45$, $SD = 3.62$) and Absorption ($M = 12.32$, $SD = 3.75$). These findings imply the presence of a high level of emotional engagement and dedication to the job, whereas the energy levels and concentration of teachers were slightly less but still in the positive range. The skewness and kurtosis of all variables were below -1.5 and above $+1.5$, indicating the assumption of normality as well as the appropriateness of the further parametric tests.

Table 1. Descriptive Statistics for Digital Competence and Work Engagement ($N = 150$)

Variable	Mean (M)	SD	Min.	Max.	Skewness	Kurtosis
Digital Competence (Total)	45.35	16.57	8	88	0.36	-0.2
Professional Engagement	8.01	3.46	0	16	0.23	-0.35
Digital Resources	6.39	2.51	0	12	0.02	-0.21
Teaching & Learning	8.41	3.73	0	16	0.02	-0.6
Assessment	6.29	2.57	0	12	0.21	-0.65
Facilitating Learners' Digital Competence	6.45	2.66	0	12	0.16	-0.46
Empowering Digital Learning	9.81	4.35	0	20	0.29	0.13
Work Engagement (Total)	38.25	10.61	0	54	-0.98	1.29
Vigor	12.45	3.62	0	18	-0.74	0.91
Dedication	13.47	3.93	0	18	-1.04	1.09
Absorption	12.32	3.75	0	18	-0.72	0.63

Overall, these results indicate that although teachers rated themselves as reasonably competent in terms of utilizing digital technologies in teaching and professional activities, some areas, especially the assessment and empowerment of learners, were less likely to be rated in terms of confidence, which can serve as the focus of professional development programs.

In terms of the relationship between total digital competence and total work engagement, the results revealed a positive correlation between them ($r = .285$, $p < .001$), which shows that teachers having greater digital competence are likely to have more engagement in their work. Professional Engagement was the most strongly correlated with work engagement ($r = .308$, $p < .001$), followed by Empowering Learners ($r = .277$, $p < .01$), and then Assessment ($r = .276$, $p < .01$). Although the correlations of Teaching & Learning ($r = .178$, $p < .05$), Digital Resources ($r = .230$, $p < .01$), and Facilitating Learners Digital Competence ($r = .277$, $p < .01$) were somewhat lower, it still shows an overall positive relationship in the various areas of digital competence (see Table 2). Such results suggest a positive association between digital competence and work engagement. However, the magnitude of these correlations was generally small to moderate, indicating that digital competence represents only one of several factors potentially associated with teachers' engagement. Interestingly, competencies related to professional engagement and learner support showed relatively stronger associations with work engagement than other dimensions, suggesting that relational and facilitative aspects of digital competence may be particularly relevant in technology-mediated teaching contexts. My and Van (2022) also emphasize that the educational value of technology depends on its meaningful integration into supportive pedagogical environments rather than on technology use alone.

Table 2. *Correlations between Digital Competence and Work Engagement (N = 150)*

Variable	1	2	3	4	5	6	7	8
1. DC Total	—							
2. Professional Engagement	.822**	—						
3. Digital Resources	.796**	.711**	—					
4. Teaching & Learning	.902**	.673**	.649**	—				
5. Assessment	.876**	.614**	.625**	.802**	—			
6. Facilitating Learners' Digital Competence	.872**	.629**	.648**	.746**	.782**	—		
7. Empowering Digital Learning	.873**	.603**	.570**	.741**	.733**	.735**	—	
8. Work Engagement (Total)	.285**	.308**	.230**	.178*	.276**	.277**	.223**	—

Note. *p < .05; **p < .01.

On the other hand, to investigate the effects of demographic factors on work engagement and digital competence, analyses of variance and *t*-tests were performed. The major variations in digital competence occurred in terms of age, school type, and level of education. Teachers younger in age (22–26 years) expressed greater digital competence compared to older professionals (aged 49+), suggesting that teachers in the early stages of career might be more conversant or inclined towards digital technologies. The teachers in the private schools rated higher than their counterparts in the public school which could be attributed to institutional support, accessibility of resources, or even expectations of the use of the technology. Lastly, postgraduate teachers were more digitally skilled compared to bachelor's degree teachers, suggesting that higher levels of education may be associated with stronger perceptions of digital competence.

Conversely, there was relatively no difference in work engagement among the demographic groups, and no significant differences were found among genders, age, teaching experience, school type, grade level, and education level. There was a non-significant trend toward teachers in postgraduate degrees having a slightly higher engagement (see Table 3). These results suggest that demographic aspects can determine the perceived digital competence among teachers, whereas the level of engagement is more uniform, and it might be affected by the intrinsic motivation aspects or professional identity instead of extrinsic attributes.

Table 3. *Summary of Group Differences in Digital Competence and Work Engagement (N = 150)*

Variable	Group comparison	Test	Statistic	df	p	Direction of difference
Digital Competence (Total)	Gender	<i>t</i> -test	t = −0.90	148	.37	No significant difference
	Age	ANOVA	F = 3.33	4,145	.01*	22–26 > 49+
	Teaching Experience	ANOVA	F = 1.64	5,144	.15	No significant difference
	School Type	<i>t</i> -test	t = −2.57	148	.01*	Private > Public
	Grade Level	ANOVA	F = 0.27	2,147	.77	No significant difference

(Continued)

Variable	Group comparison	Test	Statistic	df	p	Direction of difference
Work Engagement (Total)	Education Level	t-test	t = -2.03	148	.04*	Postgraduate > Bachelor
	Gender	t-test	t = 0.82	148	.41	No significant difference
	Age	ANOVA	F = 0.43	4,145	.79	No significant difference
	Teaching Experience	ANOVA	F = 0.70	5,149	.62	No significant difference
	School Type	t-test	t = -1.28	148	.20	No significant difference
	Grade Level	ANOVA	F = 0.30	2,149	.74	No significant difference
	Education Level	t-test	t = -1.84	47.22	.07	No significant difference (trend: Postgraduate ↑)

Regarding the qualitative analyses, two broad categories emerged: *Sources of Passion and Commitment* and *Impact of Digital competence Development on Engagement* (see Table 4). The teachers always stressed the motivational and emotional components of communication with the students. Among the former, sub-themes were emotional connections with students ($f = 7$), feeling helpful ($f = 5$), student interest ($f = 6$), student willingness ($f = 5$), observing student development ($f = 6$), and leaving a mark on the lives of students ($f = 4$). These sub-themes suggest that relational and affective aspects of teaching were frequently described by participants as important sources of professional engagement.

The second category focused on participants' perceptions of the relationship between digital competence and engagement. Teachers reported that learning to use digital tools was associated with improved lesson management ($f = 6$), communication with students ($f = 5$), opportunities for continuous professional development ($f = 7$), and collaboration with colleagues ($f = 6$). Participants also described how confidence in using technology was related to greater instructional flexibility and willingness to explore new teaching practices. These perceptions suggest several ways in which digital competence may be connected to teachers' professional interest and engagement.

Table 4. Themes Emerging from Qualitative Analysis

Main category	Sub-categories	Themes (with frequency)
Sources of Passion and Commitment	Student Interaction and Support	Emotional Connections with Students ($f = 7$) Feeling Helpful ($f = 5$)
	Student Interest and Motivation	Student Interest ($f = 6$) Student Willingness ($f = 5$)
	Observing Growth	Observing Student Development ($f = 6$) Leaving a Mark on Students' Lives ($f = 4$)
Impact of Digital Competence Development on Engagement	Skill Improvement and Engagement	Lesson Management ($f = 6$) Student Communication ($f = 5$)
	Motivation Through Technological Exploration	Continuous Professional Development ($f = 7$) Peer Collaboration ($f = 6$)

Quantitative and qualitative results converge to show that higher digital competence is associated with higher engagement, and teachers describe practical ways in which digital skills support their instructional and emotional engagement (see Table 5). By structuring findings according to research questions, the connection between evidence and study objectives becomes explicit, while interpretation related to the DEC model is reserved for the Discussion section.

Table 5. *Joint Display of Quantitative and Qualitative Findings*

Quantitative finding	Qualitative support	Integrated interpretation
Digital competence positively correlated with work engagement ($r = .285$)	Teachers reported greater confidence, flexibility, and reduced technology-related stress when using digital tools.	Digital competence may function as a professional resource associated with work engagement rather than as its sole determinant.
Professional Engagement showed the strongest correlation with work engagement	Teachers emphasized peer collaboration, communication, and continuous professional learning.	Social and professionally oriented uses of technology appear to strengthen engagement more than technical skills alone.
Assessment and Empowering Learners received the lowest quantitative scores	Teachers rarely discussed digital assessment or learner empowerment and focused more on everyday instructional practices.	Lower confidence in advanced pedagogical uses of technology is reflected in both quantitative and qualitative findings, indicating potential areas for professional development.
Work engagement remained high across demographic groups	Teachers consistently described strong commitment to students, meaningful relationships, and professional purpose regardless of background.	Teacher engagement appears to be sustained by relational and motivational factors beyond digital competence.
Demographic differences emerged for digital competence but not work engagement	Teachers linked confidence in technology mainly to professional learning opportunities and institutional support.	Digital competence appears to be influenced by contextual and professional conditions, whereas engagement is shaped by broader motivational resources.

Discussion

The present study examined the relationship between EFL teachers' digital competence and work engagement within technology-mediated instructional contexts. The findings indicate that digital competence is positively correlated with work engagement; however, the relationship is relatively modest and influenced by several contextual and psychological factors. Overall, the results suggest that digital competence may be understood not only as a technical skillset but also as a professional resource associated with teachers' engagement in technology-mediated teaching contexts (Bakker & Demerouti, 2007; Collie, 2023).

Regarding the first research question, there was a differentiated pattern across the different aspects of digital competence. Teachers appeared more confident when using digital technologies for communication and instructional delivery than for assessment and learner empowerment. One possible explanation is that assessment and learner empowerment require more sophisticated pedagogical decision-making than routine technology use. Unlike lesson preparation or communication, these dimensions require teachers to integrate technological, pedagogical, and evaluative knowledge simultaneously, which may explain the relatively lower confidence reported in these areas. Similar findings

have been reported in previous studies highlighting the challenges teachers face when implementing higher-order digital pedagogies (Instefjord & Munthe, 2017; Petko et al., 2018).

In contrast, levels of work engagement were high across all participants, particularly in the dimension of dedication. This suggests that teachers remain committed to the profession regardless of differences in their levels of digital competence. From an application of the JD-R model, engagement is sustained not only by competence but also through intrinsic motivation, professional identity, and emotional commitment to their teaching (Bakker & Demerouti, 2007; Schaufeli et al., 2006). Supplementary qualitative results also support this finding, showing that teachers' sources of engagement mainly stem from interaction with their students, witnessing student learning progress, and seeing the effects of their teaching on students.

In terms of the second research question, the analysis showed that there was a statistically significant positive relationship between digital competence and work engagement. However, the relationship was small to moderate in magnitude ($r = .285$), suggesting that digital competence may represent only one of several factors associated with teachers' work engagement. This suggests that a substantial proportion of variance in work engagement is likely explained by other contextual, motivational, and organizational factors. Interestingly, the highest correlation between the two was found when the dimensions related to professional interaction and learning support were examined. These results suggest that engagement may be more closely associated with pedagogically oriented uses of technology (Redecker, 2017; Tondeur et al., 2017). The qualitative findings further illuminated this relationship, as teachers reported that higher levels of digital competence increased their confidence, reduced instructional stress, and enabled them to adopt more flexible and interactive teaching practices. From a DEC perspective, these findings suggest that psychological resources such as self-efficacy and perceived control may be relevant for understanding how digital competence relates to work engagement (Bandura, 1997; Howard & Tondeur, 2023). Given that digital competence explained only a relatively small proportion of variance in work engagement, future research should continue exploring additional contextual, organizational, and psychological factors that may contribute to teacher engagement.

Regarding the third research question, demographic factors appeared to influence teachers' digital competence but not their level of work engagement. Specifically, younger teachers, teachers working at private institutions, and teachers holding postgraduate degrees were more likely to report higher levels of digital competence, possibly due to differences in training opportunities, access to resources, and institutional expectations regarding technology use (Petko et al., 2018; Tondeur et al., 2017). Furthermore, work engagement did not appear to vary among different demographic categories. This indicates that work engagement is less related to demographic characteristics and more influenced by both context and motivation (Bakker & Demerouti, 2007; Collie, 2023). This could explain the consistent qualitative findings related to the presence of the same types of motivation regardless of participant demographics.

The fourth research question explored teachers' perceptions of digital competence and work engagement. Qualitative results reflect the importance of relational and emotional aspects of teacher engagement. Engaging with students, observing students as they progress, and perceived competence of the teacher contributed to the teacher's level of engagement. Digital competence enabled teachers to adopt more flexible instructional practices, encouraged innovation, and reduced technology-related anxiety. Participants particularly associated digital competence with lesson management, student communication, continuous professional development, and peer collaboration. These technology-related themes suggest that teachers perceived digital competence primarily through its practical and professional applications in everyday teaching rather than as an isolated technical skill. Therefore, beyond supporting instructional effectiveness, digital competence was also perceived to contribute to teachers'

psychological well-being (Skaalvik & Skaalvik, 2017). While these themes primarily reflected broader sources of teacher engagement rather than digital competence itself, participants frequently linked these experiences to their use of digital tools, suggesting that digital competence may support rather than directly generate engagement. This pattern may partly reflect the design of the interview protocol, which encouraged participants to discuss both engagement-related and technology-related experiences. As a result, the qualitative findings should be interpreted primarily as illustrating how digital competence may support engagement rather than as direct evidence of specific dimensions of digital competence. The findings support the usefulness of DEC as an integrative framework for understanding how digital competence interacts with motivational and contextual factors to shape teachers' engagement in technology-mediated instruction. The DEC framework helps explain why teachers may have similar levels of computer technology access (hardware) and similar levels of computer literacy/ability (software) but differ in their instructional engagement with technology (Bakker & Demerouti, 2007; Tondeur et al., 2017).

Importantly, DEC contributes beyond the individual perspectives offered by DigCompEdu and the JD-R model. While DigCompEdu primarily explains what teachers are able to do with digital technologies and the JD-R model explains how resources contribute to engagement, DEC provides an interpretive lens for understanding how digital competence functions as a professional resource within broader engagement processes. In the present study, teachers frequently described how digital competence supported confidence, instructional flexibility, collaboration, and professional growth. These findings suggest that digital competence may influence engagement not directly, but through its interaction with motivational and contextual resources. Thus, DEC helps explain why teachers with comparable levels of technology access or technical skills may differ in their engagement with technology-mediated instruction. Rather than explaining digital competence or engagement separately, DEC offers a mechanism for interpreting how pedagogical competence becomes translated into sustained professional engagement under supportive contextual conditions. This interpretation is also consistent with research suggesting that meaningful engagement with technology in language education extends beyond technical skills and involves purposeful interaction with digital learning environments (Henry & Thorsen, 2019).

From the contextual lens, the findings point to larger trends in the Turkish education system regarding the effects of the FATİH Project. Although the project has significantly improved technological infrastructure by expanding access to computers and the Internet, technology has not always been effectively integrated into classroom instruction and pedagogical practice. Teachers' ability to use technology to enhance student learning appears to depend on ongoing professional development, institutional support, and confidence in technology use for instructional purposes. These findings are consistent with previous research that indicates successful (sustainable) technology integration occurs only when the technology infrastructure of an organization and the pedagogy of the teacher (including initial and ongoing professional development/training) support each other (Howard & Tondeur, 2023; Tondeur et al., 2017).

Implications

Theoretical Implications

The findings of this study contribute to the growing body of research on technology-mediated language teaching by offering an integrative perspective on the relationship between digital competence and work engagement. While previous studies have largely examined these constructs independently, the present study suggests the value of considering their interaction within an integrated conceptual framework. In this regard, the DEC framework provides a useful lens for understanding how digital competence may function as a professional resource associated with teachers' engagement in teaching.

By drawing on the JD-R model, the study extends existing research by positioning digital competence within broader engagement processes, highlighting its role in balancing instructional demands and available resources (Bakker & Demerouti, 2007; Collie, 2023). The findings also reinforce the idea that engagement is shaped not only by individual capabilities but also by contextual and motivational factors, supporting multidimensional perspectives in teacher development research (Schaufeli et al., 2006; Tondeur et al., 2017). In this sense, the study contributes to the literature by moving beyond isolated constructs and offering a more holistic account of teachers' professional experiences in digitally-mediated EFL environments.

Practical Implications

The findings of the study have several implications for teacher education, professional development, and institutional policy. First, the results suggest that developing teachers' digital competence should go beyond technical training and focus on pedagogically meaningful uses of technology. Professional development programs should therefore emphasize how digital tools can be integrated into teaching practices that promote interaction, learner engagement, and effective assessment (Redecker, 2017; Tondeur et al., 2017).

Second, given the relationship between digital competence and work engagement, institutions should provide sustained support structures that enable teachers to effectively use technology. This includes access to training opportunities, collaborative learning environments, and ongoing technical and pedagogical support. Such support is essential for reducing instructional stress and enhancing teachers' confidence in technology-mediated teaching (Collie, 2023; Howard & Tondeur, 2023).

Third, the findings highlight the importance of considering teachers' motivational and emotional experiences when implementing digital initiatives. Policies that focus solely on infrastructure or access are unlikely to lead to meaningful integration unless they are accompanied by strategies that support teacher engagement and professional well-being. In this respect, fostering a supportive institutional culture that values teacher autonomy, collaboration, and continuous learning may enhance both digital competence and sustained engagement.

Limitations and Future Research

The study is restricted to self-report measures and cross-sectional data of EFL teachers in a single region of Türkiye, which might limit generalizability. Although self-reports help to capture the perceptions of the teachers, they might not be fully representative of the classroom practice; therefore, observational or performance-based data could be used to supplement the information. The local emphasis and absence of longitudinal data restricts knowledge of dynamic changes and cause and effect relationships. Cross-regional, cross-school, or national studies would help shed light on contextual issues that affect digital engagement. In addition, the qualitative findings primarily reflected broader sources of teacher engagement and provided comparatively less direct evidence regarding specific dimensions of digital competence. Future qualitative studies may benefit from interview protocols that more directly explore digital decision-making, technology adaptation, digital confidence, digital pedagogy, and technology-related challenges. Future research should also consider longitudinal designs to better capture causal relationships. The response rate was 71.4%, which is generally acceptable for survey-based educational research. However, the possibility of non-response bias cannot be completely excluded, as teachers who chose not to participate may have differed from respondents in their levels of digital competence or work engagement. In addition, several DigCompEdu dimensions demonstrated relatively high intercorrelations. Although this may reflect conceptual relatedness among the dimensions, it also suggests potential overlap that should be considered when interpreting dimension-level findings.

The future study might be longitudinal or experimental in nature, aiming to explore the relationship between interventions aimed at improving DEC (via professional development, mentoring, or reflective practice) and teacher engagement and student achievement. Mediating or moderating variables like digital self-efficacy, organizational climate, teacher identity, technostress, and well-being strategies could also be examined through studies. Lastly, future research may further refine and evaluate the usefulness of DEC as a conceptual framework across different educational contexts, teacher populations, and technology-mediated learning environments.

Conclusion

This paper suggests that successful digital practice in EFL instruction depends not only on access to technology but also on the interaction among digital competence, teacher engagement, and supportive institutional conditions. These findings highlight the importance of aligning technological infrastructure with pedagogical practices and teacher development in order to achieve meaningful and sustainable digital transformation in EFL education. Moreover, the findings suggest that attention to digital competence, engagement, and supportive institutional conditions may contribute to teacher resilience, creativity, and innovation in technology-mediated teaching. Teachers who reported greater engagement and confidence in technology use also described positive experiences related to instructional flexibility, student interaction, and professional learning. The DEC framework may offer a useful lens for understanding how school culture, leadership, and communities of practice can support more interactive and sustainable technology-mediated teaching.

On a larger scale, the study reveals the necessity to align policy, institutional support, and professional development in order to convert technological infrastructure into pedagogical innovation that makes a difference. The findings suggest that supportive institutional conditions, continuous professional development, and national digital education initiatives may contribute to teachers' capacity to remain engaged and adapt to changing digital contexts. Although carried out in Türkiye, the insights are applicable to other EFL contexts that operate within the complex interaction among infrastructure, pedagogy, and professional development.

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