REPUBLIC OF TÜRKİYE
YILDIZ TECHNICAL UNIVERSITY
GRADUATE SCHOOL OF SOCIAL SCIENCES
DEPARTMENT OF FOREIGN LANGUAGES EDUCATION ENGLISH LANGUAGE TEACHING PROGRAM

MASTER'S THESIS

AN INVESTIGATION OF DIGITAL COMPETENCES OF ENGLISH LANGUAGE INSTRUCTORS

AHMET KAPLAN
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THESIS ADVISOR
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AHMET KAPLAN tarafından hazırlanan “An Investigation of Digital Competences of English Language Instructors” başlıklı çalışma, **[24/07/2024]** tarihinde yapılan savunma sınavı sonucunda oybirliği ile başarılı bulunmuş ve jürimiz tarafından Yabancı Diller Eğitimi Ana Bilim Dalı İngiliz Dili Eğitimi Programında **YÜKSEK LİSANS** tezi olarak kabul edilmiştir.

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ÖZ

İNGİLİZCE ÖĞRETİM GÖREVLİLERİNİN DİJİTAL YETERLİKLERİNİN İNCELENMESİ

Bu çalışma Türk yükseköğretim kurumlarında İngilizceyi yabancı dil olarak öğreten öğretim elemanlarının dijital yeterliliklerini incelemektedir. Çalışmada şu sorular temel alınmıştır: 1)İngilizceyi yabancı dil olarak öğreten öğretim görevlilerinin dijital kaynaklarla etkileşim seviyesi nedir? 2) Türk İngilizce öğretim görevlilerinin kendi bildirdikleri dijital yeterlilik seviyeleri ile DigCompEdu tarafından değerlendirilen dijital yeterlilik seviyesi arasında fark var mıdır? 3) İngilizce öğretim görevlilerinin dijital kaynaklarla etkileşim düzeyleri bağımsız değişkenlere (yaş, cinsiyet ve deneyim yılları) göre farklılık göstermekte midir? 4) İngilizce öğretim görevlilerinin sınıfta dijital teknoloji kullanımları dijital yeterlilik seviyelerine göre farklılık göstermekte midir? 5) Sınıfta kullanılan dijital araçlar nedir?

Türkiye genelinde çeşitli üniversitelerden yüz İngilizce öğretim görevlisi, Eğitimcilerin Dijital Yeterlilikleri için Avrupa Çerçevesi'nin (DigCompEdu), dijital transformasyon üzerinde çalışan Kopenhag merkezli bir ekip olan MapUs tarafından geliştirilmiş çevrimiçi bir ankete katıldılar. Veri analizi, tanımlayıcı ve çıkarımsal istatistiksel yöntemler kullanılarak gerçekleştirildi. Çalışmada, öğretim görevlilerinin kendi bildirdikleri yeterlilik seviyeleri ile DigCompEdu tarafından değerlendirilen yeterlilik seviyesi arasında, özellikle üst-seviyelerde, önemli farklılıklar bulunmuştur (Chi-square X^2 (3, N = 95) = 89.368, $p < 0.001$). Cinsiyet farkları yönünden, kadın öğretim görevlilerinin erkek öğretim görevlilerine göre organizasyonel iletişim ve rehberlikte daha ileride oldukları sonucu elde edilmiş, ayrıca dijital yeterlilik bakımından yaş ve deneyimle ilintili belirgin farklar bulunmamıştır. Ancak, Dijital İçerik Oluşturma yeterliliğinde, deneyimle ilgili değişkenlik bulunmuştur ($F(4, 95) = 2.576$, $p = 0.042$). Çalışma ayrıca, sunum ve multimedya kullanımının dijital araçlar arasında önde geldiğini, sunum kullanımının %88, video ve sesli dijital araç kullanımının %87 olduğunu göstermiştir. Bulgular, mesleki gelişimde kendini değerlendirme kendini değerlendirme ve dijital içerik oluşturma alanlarında eğitim ihtiyacını göstermektedir. Bu araştırma, algılanan ve değerlendirilen dijital yeterlilikler arasındaki farklılıkları vurgulayarak, dijital yeterlilik çerçevesine katkıda bulunur ve mevcut dijital yeterlilik değerlendirme modellerini, öğretim görevlilerinin kendilerini değerlendirmede tarafgirliklerini azaltacak mekanizmaları içerecek şekilde geliştirmenin gerekliliğini önerir. Uygulamada, mevcut çalışma, eğitim liderlerine ve bu alanda politika belirleyenlere İngilizce öğretim görevlilerinin, hangi alanda gelişime ihtiyaç duydukları konusunda bilgi vermektedir. Ayrıca bulgular, belirli dijital yeterliliklerdeki belirli boşlukları ele alan sürekli ve belirli bir hedefe yönelik eğitim programlarının entegrasyonunu savunur, bu da yükseköğretim kurumlarında dijital eğitimin genel kalitesini artırabilir.

Anahtar Kelimeler: Dijital Yetkinlik, Eğitim, Öğretim, Üniversite, İngilizce

ABSTRACT

AN INVESTIGATION OF DIGITAL COMPETENCES OF ENGLISH LANGUAGE INSTRUCTORS

This study explores the digital competence of English as a Foreign Language (EFL) instructors within Turkish higher education, guided by the following research questions: 1) What is the EFL instructors' level of engagement with digital resources? 2) Is there a difference between the self-reported and DigComEdu-assessed digital competence levels of Turkish EFL instructors? 3) Do the EFL instructors' levels of engagement with digital resources differ according to the independent variables (age, gender, and years of experience)? 4) Do the EFL instructors' digital technology use in class differ according to their digital competence level? and 5) What are the digital tools used in class?

A sample of a hundred EFL instructors from various universities throughout Türkiye participated an online survey, which was based on the DigCompEdu framework (the European Framework for Digital Competence of Educators), developed by MapUs, the Copenhagen based team that works on digital transformation. Data analysis was conducted using both descriptive and inferential statistical methods. The study revealed significant differences between self-reported and DigCompEdu-assessed competences, particularly at higher levels, where overestimations were evident (Chi-square X^2 (3, N = 95) = 89.368, $p < 0.001$). Gender differences showed that female instructors scored significantly higher in organizational communication and guidance than their male counterparts, with no significant age or experience-related differences in most digital competences. However, the 'Digital Content Creation' competence did exhibit variability with experience ($F(4, 95) = 2.576$, $p = 0.042$). The study also highlighted that presentations and multimedia use were predominant among digital tools, with 88% of instructors using presentations and 87% using videos and audio materials. The findings emphasize the need for precise self-assessment in professional development and targeted training in underdeveloped competences like digital content creation.

This research contributes to the theoretical framework of digital competence by highlighting the discrepancies between perceived and assessed competences, suggesting the need for refining existing models of digital competence assessment to include mechanisms that mitigate self-assessment bias. Practically, the study informs policy makers and educational leaders about the critical areas where EFL instructors require further professional development. Additionally, the findings advocate for the integration of continuous, targeted training programs that address specific gaps in digital competences, potentially enhancing the overall quality of digital education in higher education institutions.

Key Words: Digital Competence, Education, Teaching, University, English

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ABBREVIATIONS

CK: Content Knowledge

DC: Digital Competence

DG EAC: Directorate-General for Education, Youth, Sport and Culture

DTC: Digital Teaching Competence

EU: European Union

ICT: Information and Communication Technologies

CFT: Competence Framework for Technology

IIEP: International Institute for Educational Planning

ISTE: The International Society for Technology in Education

JISC : Joint Information Systems Committee

JRC: European Commission's Joint Research Centre

MOOC: Massive Open Online Courses

P21 : Partnership for 21st Century

PDC: Pedagogical Digital Competence

PK: Pedagogical Knowledge

PS: Professional Standards

TK: Technology Knowledge

t-MOOC: Task-based Massive Open Online Courses

TPACK: Technical Pedagogical Content Knowledge

1. INTRODUCTION

1.1. Background of the Study

At the end of the twentieth century, profound technological advances precipitated significant global changes. Specifically, the rapid development of the world wide web, or the internet, which has been named as Information and Communication Technologies (ICT) has significantly altered the way people complete their tasks. The transformation affected almost all facets of life, including work and entertainment. One could argue that life has, in some ways, been digitalized. Ghomi and Redecker (2019) state that, throughout this process, acquisition of digital skills has become vital in many fields such as individual development, social life, professional life, and engaged citizenship. Inevitably, education is one of the most important fields that technology has had an impact on. Cabero-Almenara, et al. (2020) emphasize that the wide availability of educational practices for all levels of society due to rapid technological expansion necessitates the incorporation of technology within educational environments.

With the above-stated breakthrough in technology and the spread of the utilization of the internet within the last decades, several terms like *information literacy, computer literacy, internet literacy, media literacy, and multi-model literacy* have emerged, and all these terms have been linked with the application of digital sources in education (Falloon, 2020). Ilomäki et al. (2011) state that these terms are sometimes used in a limited sense, referring only to a certain field of digital technology, and sometimes in a broader sense, like *media literacy skills*. The different uses are due to rapid developments in technology. In line with these developments, the word *digital* has become the center of attention. From the late 2000s on, the terms *digital* and *digitalization* have come to the forefront, which has also led to the exploitation of the terms - *digital literacy* and *digital competence*. In its most elementary form, the word *digital* is defined as “connected with the use of computer technology, especially the internet” (oxfordlearnersdictionary.com). The term *digital literacy* was defined as the capacity to proficiently employ digital technologies for

information management, knowledge evaluation, content creation, and effective communication during learning and professional tasks. (Kim, 2019, p. 5, as cited in Dias-Trindade & Gomes Ferreira, 2020). Along with this comprehensive definition Dias-Trindade and Gomes Ferreira (2020) state that *digital literacy* should be considered as the foundational element of the term *digital competence*. The term digital competence, which is regarded "both a requirement and a right of citizens in today's society" (Ferrari, 2012, p. 3), is defined in a variety of ways. A fundamental definition of *digital competence* by Calvani et al. (2008) is "the set of contents, skills, and attitudes that are required when using ICT" (as cited in Ramírez-Montoya et al., 2017, p. 357). Krumsvik (2008) stated that *computer literacy, media literacy, digital literacy and digital competence* are all concepts emphasizing the skills required for effective technology management in the digital age. Being in the realm of this study, the concept of *teachers' digital competence* is highlighted by Krumsvik (2008) as a more complicated and comprehensive proficiency in the utilization of ICT with pedagogical evaluation within an educational setting, meaning that pedagogy and subject matter reside in the core of the concept while technical skills constitute only a part of this complex concept.

The term digital competence was identified as one of the eight key competences for lifelong learning by the European Union as early as 2006 (Ferrari, 2012). In terms of educators, as providers of knowledge to the society, Basilotta-Gómez-Pablos et al. (2022), emphasize that acquiring the skill has become crucial for educators today.

Having recognized the significance of digital competences and skills for development, The European Council, an EU institution responsible for establishing the overarching political orientation and priorities of the Union, started to launch several projects in the late 2010s. In this regard, the Joint Research Center (JRC), the European Commission's science and knowledge service which offers impartial, evidence-driven scientific insights and knowledge to strengthen EU policies aimed at beneficial impact, engaged in the development of digital competence frameworks across multiple domains, such as; DigComp for citizens, DigCompOrg for educational organizations, DigCompConsumers for consumers, and DigCompEdu. The DigCompEdu, or the European Framework for Digital Competence of Educators, was created in response to the need for a set of digital competences for educators specific to their line of work so they would not lag behind in utilizing digital technologies (Redecker, 2017).

In terms of digital competence models and frameworks, Esteve et al, (2022) state that although the issue is of high importance, the amount of literature on the subject in higher education context is notably less extensive than the literature covering pre-university level. Basilotta-Gómez-Pablos et al. (2022), also express the existence of a great amount of work at the national or international level targeting pre-university education institutions, comparing the relatively less research in digital competences of university level educators, which has been increasing recently. In the European context, Basilotta-Gómez-Pablos et al. (2022) note that universities in Spain and Portugal have made the largest contributions to research on digital competence among university educators.

In terms of research on the scope of digitalization in the educational realm in the Turkish context, the early research can be found mainly focusing on ICT, Technological-Pedagogical Content (TPACK), digital literacy, attitudes to technology and digital competence within a general sphere targeting mostly pre-service teachers. During the present research, it was noted that the framework DigCompEdu was used in only five studies as could be found on the website of the Council of Higher Education Theses Center (CoHE). Two of these studies using the DigCompEdu focus on the field of ELT, Canbulat (2022) and Karacan (2023). The present study aims to fill the gap in the literature and investigate the digital competences of in-service English language instructors in higher education.

1.2. Statement of the Problem

As stated in the preceding section, due to technological advancements, the concept of digital competence evolved from several other terms and concepts such as information and communication technologies, technology literacy, and digital literacy over the last few decades. Today, digital competence is a broad term that includes the concepts of digital skills, digital literacy, and technology literacy. According to Ferrari et al. (2012), the term's scope includes not only learning the skills and strategies required for ICT use in many spheres of life, from entertainment to consumerism, but also information management, ethical and responsible behaviour, collaboration, and the creation of professional and educational content and knowledge.

Nearly all societal spheres are being impacted by the current technological revolution, including education. In today's information and knowledge society, having

a solid foundation in technology is a requirement for university professors (Aiastui et al., 2021, p. 841). According to Aisatu et al. (2021), regular training for university professors is needed. The main reason for this lies in the vital role of educators at all educational levels, in fostering societal progress by providing individuals with the latest skills and knowledge. Achieving this necessitates that educators themselves acquire and retain competence in their relevant fields.

A significant portion of the research available on the website of the Turkish Council of Higher Education Theses Center is focused on educators from various subject areas working at primary, secondary and high school levels. Among school subjects, foreign language teaching in general, and EFL in particular, is a critical area where digital competences are highly required for instructors. The need for interaction in classes, as well as the high level of engagement of today's students with the digital world, compel instructors to become digitally competent. Considering this changing educational environment and the increasing dependence on digital resources, in-service EFL instructors cannot remain exempt from digitalization in their context. As stated in the previous section as well, there exists a limited number of research on EFL instructors, and the available studies are primarily associated with pre-service teachers. In our understanding of the issue there exists a noticeable gap on digital competences of EFL instructors actively teaching in higher education institutions. The primary problem statement that this study seeks to investigate is: To what extent do in-service EFL instructors engage with the digitalization within the scope of the European Framework for the Digital Competence of Educators.

1.3. Purpose of the Study

The previous several decades have seen significant changes in society, which is what gave rise to the teaching and learning by competences approach (Basilotta-Gómez-Pablos et al., 2022). The extraordinary use of technological resources, strengthened by the widespread compulsory distance education during Covid-19 period brought along the issue of the digital competence as a major subject of discussion within the educational realm. Cabero-Almenara et al. (2020, as cited in (Cassio et al., 2021) claim that the digital revolution has changed higher education in a number of ways, necessitating the advancement of digital teaching competence in this field. In relation to that fact, with the increasing demand for instructors who are

highly proficient in the use of technology, research on digital competence has emerged as a potent field today (RodríguezGarcía, Aznar Díaz, et al. (2019), Rodríguez-García, Raso Sánchez, et al. (2019), (2019c) and Esteve et al. (2020), as cited in Basilotta-Gómez-Pablos et al., 2022).

Guri-Rosenblit, (2018) states that many discussions and studies must be conducted regarding the precise effects of technology on teaching and learning in general and higher education in particular. Regarding most of the research more emphasis is placed on students' learning than on instructors' instruction in the discussion around the use of digital technology in higher education (Alexander et al., 2017; Andrews & Haythornthwaite, 2009; Bates & Sangra, 2011; Guri-Rosenblit, 2009, 2010; Harasim, 2000; Johnson et al., 2016; as cited in Guri-Rosenblit, 2018). In the light of this information, the need to assess and analyze the university educators' digital competence stands as a fact. Within the Turkish context, apart from the limited research on university educators in general, specific investigation on in-service EFL instructors is scarce. This study aims to identify the digital competence level of in-service EFL instructors' levels of digital competence and provide guidance for foreign language departments in higher education institutions to plan workshops, seminars, and other professional development events for their instructors. In this sense, our research holds the potential to contribute to the current literature in certain ways.

The purpose of this study is to examine the digital competence level of EFL instructors and identify the factors that influence instructors' level of engagement with digital resources. To this end, the study employs the DigCompEdu framework created by the European Commission's Joint Research Centre (JRC) in 2017, which is considered an essential document in teachers' digital competence (Basilotta-Gómez-Pablos et al., 2022).

1.4. Significance of the Study

With the unprecedented use of technology in the last decade, and when the evolution of relevant terms such as Technology Knowledge (TK) and Information and Communication Technology (ICT) into the term Digital Competence (DC) is considered, the prominence of this study becomes evident. In the international area, 2022 research on the digital competences of educators in universities specifies that Spanish and Portuguese universities are the primary sources of contribution (Basilotta-

Gómez-Pablos et al., 2022). Within the Turkish context, it is possible to find studies on computer technologies as early as 2006 (Akbaba-Altun, 2006) and later, on technology integration, and ICT usage (Akcaoğlu, 2008; Gulbahar & Guven, 2008; Hismanoglu, 2015). Among more recent studies are, one study on ICT competence (Ardic & Ciftci, 2019), one paper reviewing the DigCompEdu framework for ELT teachers (Demiroz, 2019), and one master thesis on digital competence of pre-service English teachers (Canbulat, 2022) and a very recent PhD thesis on pre-service and in-service English language teachers (Karacan, 2023). The studies conducted on the investigation of the digital competence of educators focus on teachers from a variety of different branches and grade levels, as well as students. Based on the information available to us so far, the studies and research within the Turkish context mainly remain limited to technology integration and ICT related issues as outlined above, and on pre-service teachers. The significance of our research resides in its focused investigation on the concept of digital competence in a specific group of educators in higher education, the English language instructors. Based on our knowledge, the current research will undoubtedly be relevant and beneficial to both teachers and institutions.

1.5. Limitations of the Study

This study has certain limitations:

1. Basically, a larger sample size was anticipated to participate in the study. Only English language instructors at various universities (public and foundation) were sent an email containing the link of the questionnaire. The participation was on a voluntary basis and our study experienced a significantly lower level of participation. X
2. Since the instructors were contacted during the educational term, when they were actively in a teaching period, they may not have been sufficiently attentive to respond with the utmost academic integrity.
3. The online questionnaire's extensive length may have had an adverse effect on participants, potentially resulting in a sense of weariness as the survey proceeded.

1.6. Definitions of Key Terms

Digital Competence: "The safe, critical, and responsible use of and interaction with digital technologies for learning, at work, and for participation in society. It includes information and data literacy, communication and collaboration, media literacy, digital content creation (including programming), security (including digital well-being and cybersecurity related skills), intellectual property issues, problem solving, and critical thinking" (Council of the European Union, 2018, p. 9).

Information and Communication Technology: "A wide range of technological assets and resources utilized for the purpose of conveying, storing, generating, or trading information through devices and instruments such as computers, the online world (websites, blogs, and emails), live and recorded communication tools (radio, TV, podcasting, and storage devices), and telecommunication tools such as mobile, satellite, and/or video conferencing" (Unesco IIEP Learning Portal, https://learningportal.iiep.unesco.org/en/glossary/information-and-communication-technologies-ict, 2023).

Pedagogical Digital Competence: "The consistent capacity to apply the attitudes, expertise, and ability necessary to arrange, execute, and continuously assess and modify ICT-based teaching in accordance with theory, contemporary research, and expertise targeting students' educational growth in the most optimal manner" (From, 2017, p. 43).

DigCompEdu Framework: "A scientific framework intended for educators at all levels of education, which aims to form a general reference frame for creators of Digital Competence models, such as Member States, regional authorities, appropriate national and regional organizations, educational entities, and public or private providers of professional training, and also offers a shared language and furthers dialogue across borders" (Redecker, 2017, p.4). The DigCompEdu Framework intends to outline and portray these unique digital competences of educators by presenting 22 fundamental competences organized in 6 categories (Redecker, 2017).

2. LITERATURE REVIEW

2.1. Digital Competence

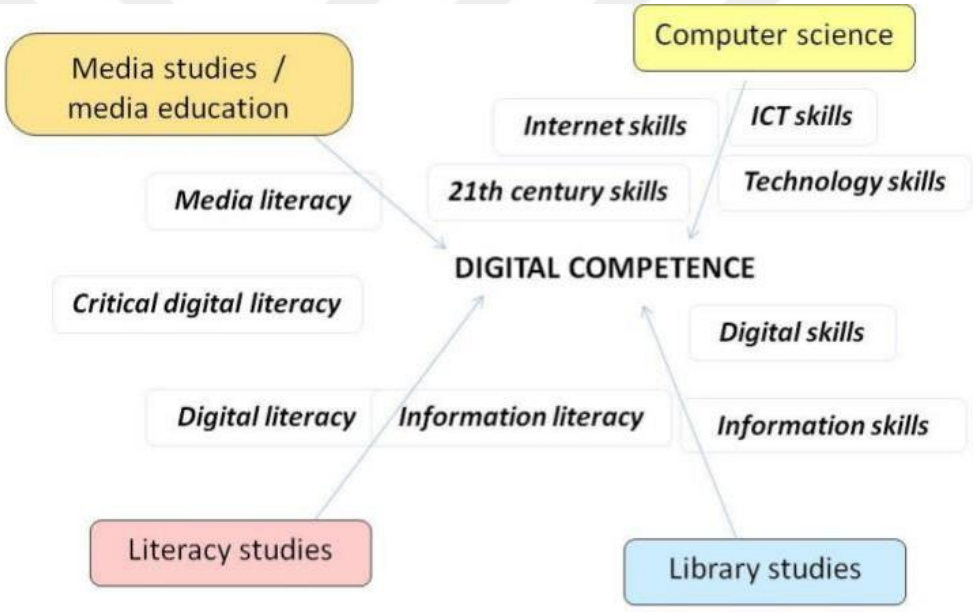
The rapid advancement of technology has caused significant changes in the world over the last few decades. This is especially true of the internet, which has significantly altered how people live their lives today. Many facets of social life, from work to how people spend their free time, have been digitalized as a result of the increased use of technology. Education has unavoidably—or perhaps more accurately, primarily—been significantly impacted by these changes, along with many other areas of life (Ferrari, 2012). In tandem with these changes, it became crucial for people to acquire digital competence as a key competence for lifelong learning, personal development, employability, social inclusion, and active citizenship (Ghomi & Redecker, 2019). The European Union recognized Digital Competence (DC) as one of the eight key competences for lifelong learning in response to the European Recommendation on Key Competences published in 2006 (Ala-Mutka 2011). The European Council (2018, p. C189/4) also issued a Council Recommendation calling on member countries to "pay special attention" to "increasing and improving the level of digital competences at all stages of education and training, across all segments of the population".

In terms of defining the term, there have been different definitions, approaches, and categorizations for the term *digital competence*. According to From (2017), there are differences in the meaning, depth, and breadth of the concept among authors (p. 44). Ala-Mutka (2011) defines the term as the use of ICT with confidence, critical thinking, and creativity to accomplish objectives pertaining to employment, learning, leisure, inclusion, and/or involvement in society. Also, DC is perceived as an intersecting key competence that not only enables people to learn other key competences like language and mathematics, but also fosters cultural awareness (Ala-Mutka, 2011). Having merged different definitions from a variety of relevant frameworks, Ferrari (2012) provides the definition as the essential knowledge, skills, attitudes, and abilities necessary for using ICT and digital media efficiently in a wide

range of tasks, from problem-solving and communication to content creation and knowledge formation, while employing critical, creative, ethical, and reflective strategies in a range of spheres of life. Similarly, Krumsvik (2007, as cited in Engen et al. 2014) sees ICT as a major aspect of DC and adds other important elements of the concept as: awareness of pedagogical-didactical ICT, meta-cognition, and digital literacy.

The European policies on digital competence have taken a variety of approaches that highlight a variety of points of view, each with its distinct concepts and definitions that complement one another. Ilomäki et al. (2011) shows digital competence and the related concepts in the figure below:

Figure 1. Digital Competence, Related Disciplines and Concepts



Reference: Ilomäki, 2011, p. 5

Although digital competence is the most recent concept for defining technological abilities, terms such as ICT skills, technology skills, information technology skills, 21st century skills, information literacy, digital literacy, and digital skills, as shown in figure 1, are frequently used as synonyms for digital competence and digital literacy (Ilomäki et al., 2011, p. 1). Some words, like "Internet skills," are specific to a small subset of digital technology, while others, like "media literacy skills" or "digital literacy," cover a wider range of media and literacy (Ilomäki et al., 2011, p. 1).

As Figure 1 depicts, the terms *literacy* and *skills* have a significant emphasis. *Skills* refers to the capacity to use information and expertise to carry out tasks and find solutions (Ala-Mutka, 2011, p. 17). Regarding the term *literacy*, Jones and Flannigan (2006) state in the early 2000s that before the turn of the twenty-first century, being able to read and write was a frequent way to identify someone as "literate", but recent perspectives on literacy have emerged in the new millennium due to the swift advancements in technology. Jones and Flannigan (2006) assert that the 21st-century lifestyle necessitates a broader definition of literacy that extends beyond reading and writing since a lack of digital or visual literacy is akin to being handicapped in this century. According to them, the problem is exacerbated when digitally literate students encounter technologically challenged instructors. Digital literacy is the ability to perform tasks in a digital environment; however, it consists of a much broader perspective than using the software alone, expanding to information literacy, which is simply defined as the capability of critically evaluating and assessing the genuineness of the digital information (Jones & Flannigan, 2006, p. 6). Bawden (2001, as cited in Ala-Mutka, 2011, p. 25). On the other hand, it indicates the attribution of the term information literacy with “library literacy” and clarifies that it is a broader concept consisting of efficient utilization of computer and multimedia technologies.

Another term related to digital competence is media literacy, which has a more extensive background. Livingstone (2004) defines media literacy as the proficiency to access, examine, evaluate, and produce messages in a variety of formats, and these four components strengthen each other in a dynamic learning environment. The term media literacy initially consisting of the conventional print and audio-visual media had existed in a frail state and gained more attention with the term information literacy in the late 1990s (Bawden, 2001, as cited in Ala-Mutka, 2011, p.26). Bawden (2001) also states that interconnectedness of these concepts has been recognized by most authors and media literacy has been regarded as an integral element of information literacy.

As previously mentioned, these concepts have transformed in the late 2010s into the broader notion known as “digital competence”. However, no development is exempt from the challenges that arise alongside it. Digitalization as well, has unavoidably come with its own set of problems. Even though the world has become a global village, not all citizens have access to the same opportunities. Ala-Mutka (2011) states that this situation created a disparity, or digital divide among individuals, putting

them at risk of exclusion from society and depriving them of potential opportunities. The digital divide among individuals, among the young generation as well as the elderly, the unemployed, and low-skilled adults, may arise from their socio-economic condition, geographical position as to whether they have access to technology or not, or based on their style and proficiency of retrieving knowledge (Ala-Mutka, 2011, p.21). In this regard, Ala-Mutka (2011) emphasizes the importance of well-organized educational institutions for ensuring and promoting fair and equal access to fundamental components of digital literacy for all members of society. This fact proposes the need for educators to enable citizens to reach the expected level of benefiting from the usage of digital competences.

2.2. Teachers and Digital Competence

Being social innovators, teachers' adoption of new technologies and their mastery of digital competences are viewed as critical to closing the digital divide. Since educational activities no longer only involve face-to-face communication between the educator and the learner, technological and digital advancements in the classroom have forced teachers to adopt new approaches and methods (Santos et al., 2022). Major international organizations such as the United Nations, UNESCO, the Council of the European Union, and the European Commission, as well as globally renowned institutions such as the International Society for Technology in Education (ISTE) and the Education Training Foundation (ETF), are all heavily involved in discussions about the impact of digital competences in education (Santos et al., 2021).

21st century challenges require teachers to adapt their competences as instructional approaches change in line with the 21st century learners' needs (Caena et al., 2019). Likewise, From (2017) states that increased digitalization required a new dimension in teachers' pedagogical skills and adds that "they have chosen to call this Pedagogical Digital Competence (PDC)". PDC is defined as "the capability of administering the mindset, know-how and abilities required to design and execute, and a continuing revision and assessment, technology-enhanced teaching relying on theory, up-to-date exploration and ratified experience regarding learner support in an optimal manner." (From, 2017, p. 48).

Earlier, the focus was much more on ICT and in this sense Almerich (2016) mentioned the importance of teachers' ICT competence to involve these resources into

teaching and learning environment. Krumsvik (2008) states that in our digital age teachers' digital literacy is needed to cultivate a more developed pedagogic-didactic content for digital literacy to execute the influence of digital trends in schools, pedagogy, and subjects. Krumsvik (2008) also sets forth that the term *digital competence* is used in the educational realm in a broader sense focusing on pedagogy and the subject matter keeping technical skills only as part of the concept, which frames the term *teachers' digital competence* as a more complex and holistic proficiency. Focusing on higher education teachers, Esteve et al (2022, p. 201) emphasize that digital teaching competence (DTC) is a requirement for teachers to empower their students in the digital world "by designing and transforming classroom practices and enriching their own professional development".

PDC considered, From (2017) expresses that in a broader sense, all aspects of professional pedagogical work where digitalization is involved is comprised in Pedagogical Digital Competence. Changes in technology bring challenges for teachers on two levels. One is developing their personal digital competences while the other is developing teaching activities that provide students with the necessary competences for success in the digitalised world (Hämäläinen et al, 20219). In terms of teachers' digital competence there exists a variety of frameworks, which Cabero-Almenara et al.,(2020) set forth as; European Framework of Digital Competence for Teachers DigCompEdu, The International Society for Technology in Education (ISTE) standards for Teachers, UNESCO ICT Competence Framework for Teachers (ICT-CFT), Common Spanish Framework of Digital Competence for Teachers, British Framework of Digital Teaching, Competences for the Professional Development of Colombian Teachers, ICT Competences and Standards for Chilean Teachers.

As stated above, there have been great efforts on teachers' digital competences by a wide range of organizations. In different parts of the world, different countries, organizations and institutions have put forth worthwhile endeavours. Cabero-Almenara et al. (2020) communicate that the European Framework of Digital Competence for Teachers DigCompEdu is the most valuable and sufficient one to be used as reference for the formative t-MOOC. Martínez-Pérez et al. (2022) explain MOOCs as Massive open online courses in the educational context, which have become a solution for the newly emerging challenges and changes in times of crisis such as COVID-19. Teachers' and students' acquisition of Digital Competences (DC)

does not solely mean obtaining the command of content and teaching methodologies, which goes beyond by means of technologies in the realm of education (Martínez-Pérez et al, 2022).

It is a fact that the new teacher candidates have come to the world when the technology and the digitalization had already started to gain speed, which relatively enabled them to become *digital natives*. The term *digital native* was first used by Prensky (2001, as cited in Teo, T., et al. 2014) referring to individuals who were born after the 1980s and who are "native speakers of the language of" digital technology including computers, smartphones, and the internet. Teo, T. (2014) emphasize that although the term initially focused on age, it is still controversial among academicians in terms of being defined by age only. Helsper and Eynon (2010, as cited in Teo, T., et al. 2014) underscore the term digital divide between the young and the old. Teo, T.(2014) state this aspect of the issue from the point of teachers and students, since teachers would always be older than students in the context of education. In addition, the question "How digital are the digital natives?" is being raised as well, which deepens the controversy in the subject. Grounded in these concepts and debates, the question of age for teachers and digital competence arises. Namely we have the question if younger generation teachers, whom we can call *digital* natives and older generation teachers in terms of digital competences. Kurniawati, N. et al. (2018) state that different articles have different perspectives and outcomes on the issue. Ramírez-Montoya et al. (2017) express that the new coming teachers are quite at ease with the online form of education and using the digital media and resources while a great number of in-service teachers do not identify themselves digitally ready to link digital resources with orthodox ways of instruction. Similarly, Raman and Yamat (2014, as cited in Kurniawati, N. et al., 2018) who studied twelve English teachers in terms of a hindrance in applying ICT expressed that it was the teacher's age. On the other hand, having emphasized different results in different articles, Kurniawati, N. et al. (2018) also indicate an investigation by Ferrero (2002,) who explored two generations of teachers toward ICT and discovered that it is the instructor's personal histories and their participation in technological trainings had greater affect on the positive attitudes about ICT and disclosed that there was no systematic impact of generation difference on the use of ICT by instructors.

Building on the previous discussion, the importance of teachers serving as facilitators in the teaching and learning process is often linked to the achievement of digital literacy, and in a more developed context, of digital competences in the classroom. While expressing that teachers still lack the necessary digital competence specific to Norway, Krumsvik (2008) explains the reasons for the condition as DC is a new competence and challenge in education, and there have been radical changes in Norwegian society, which affected teachers as well, and adds that the majority of teachers are aware that most digitalization is used for entertainment. In this context, many teachers are quite familiar with the situations of how willing and motivated students are when digital games are interwoven with the subjects being taught.

Esteve et al. (2022) point out that ICT has long been used in the university context, however, there has been a recent momentum in the implementation of digital resources with the practice of hybrid and flexible instruction opportunities. Esteve et al., (2022) stress that various research shows that a great number of university teachers deem their digital skills as medium or medium-high and parallel to this momentum, some other studies display despite the forementioned fact their technical skills remain below their students' levels, nevertheless, there is research presenting evidence in opposite directions.

In Türkiye, there has been an increasing awareness regarding digital competence, as highlighted by reports from international institutions such as the EU Parliament and OECD. In 2006, an article discussing the efficiency of teachers in utilizing information and communication technologies in the teaching and learning process was included in the "General Competences for Teaching Profession" document published by the Directorate General for Teacher Training and Development. This document was subsequently updated in 2017 (Toker et al, 2021). In the "Professional Skills" section of the "Competence Domain" in the General Competences for Teaching Profession document, Article B3, there is a mention of managing the teaching and learning process. Specifically, in B3.9, it states that teachers should effectively utilize information and communication technologies in their teaching and learning activities (MoNE., 2017, p. 14). According to Demirci (2021), the "2023 Educational Vision" document by the Ministry of National Education (MoNE) contains multiple objectives. Although it does not explicitly mention goals for enhancing teachers' digital competence, certain objectives can be

inferred from the document's multiple objectives. Within the concept of *Digital Content and Skills-Backed Transformation of the Learning Process* are two clear targets; 1- Establishment of an ecosystem to develop digital content and skills, 2- Production of content (material) aiming the development of digital content and the delivery of teacher training (on the subject) (Demirci 2021, p. 9). *2023 Educational Vision document*, which was stated in Demirci (2021) as well, presents some of the approaches as follows; "With the participation of different actors and institutions from the Turkish education system, an ecosystem for development of digital education and teaching contents will be created", "A National Digital Contents Archive will be created, which will make available digital education and teaching materials at determined quality standards" and "Leader teachers who develop digital learning materials will be supported and encouraged" (MEB, 2018, p. 72-73).

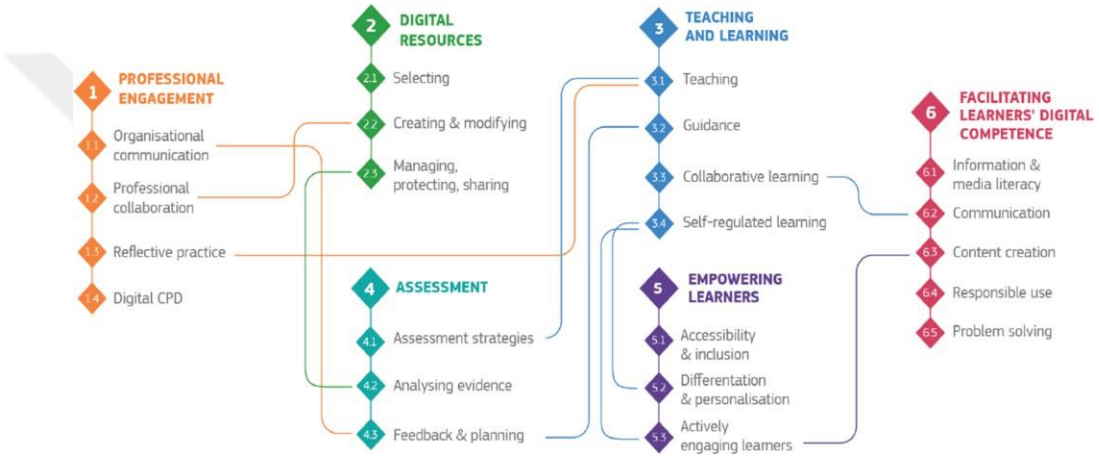
2.3. Frameworks for Digital Competence

Digital competence has emerged in the last few decades in connection with the concept of new media literacy, and recently a variety of institutions became interested in the evaluation and certification of the term, which eventually brought different models of the term (García-Valcárcel Muñoz-Repiso et al., 2020). In her report, Ferrari (2012) mentions fifteen frameworks of which contents range from 6 to 12-year-old children to senior citizens, where teachers are emphasized in UNESCO ICT Competence Framework. This framework targets defining a variety of ICT competence skills for teachers, which aims to enable them to involve technologies in their classrooms and to improve their skills in pedagogy and teamwork with their colleagues (Ferrari, 2012). Cabero-Almenara et al. (2020) state seven internationally accepted frameworks focusing on digital competence of teachers, which are; the European Framework of Digital Competence for Teachers DigCompEdu, ISTE - The International Society for Technology in Education - standards for Teachers, UNESCO ICT Competence Framework for Teachers (ICT-CFT), Common Spanish Framework of Digital Competence for Teachers, British Framework of Digital Teaching, Competences for the Professional Development of Colombian Teachers, and ICT Competences and Standards for Chilean Teachers.

The first framework is DigCompEdu, which we conducted our research through in this dissertation and will be explained in the following section. Therefore, a brief

outline of the framework is presented in this section. The DigCompEdu framework, which was published in 2017, focuses on digital competences peculiar to the teaching profession and aims to form one model inclusive of all education contexts (Ghomi et al, 2019). Redecker (2017) explains that the framework suggests 22 basic competences in 6 fields. The European Commission's Joint Research Centre (JRC) executed the efforts for the framework on behalf of the Directorate-General for Education, Youth, Sport and Culture (DG EAC) (Redecker, 2017).

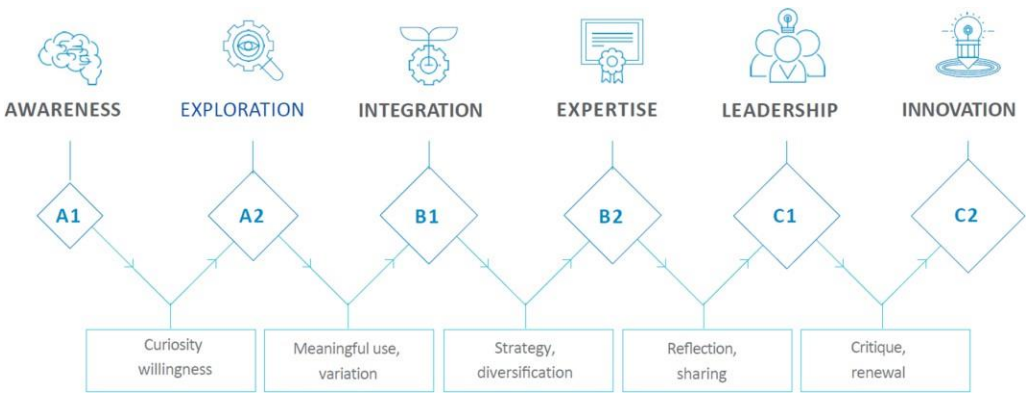
Figure 2. Competence Areas and Competences of the European Framework of Digital Competence for Teachers DigCompEdu.



Reference: Redecker and Punie (2017- as cited in Cabero-Almenara et al., 2020) p.277

Also, DigCompEdu suggests six proceeding levels of the competences (Cabero- Almenara et al., 2020): awareness, exploration, integration, expertise, leadership, and innovation. These levels are shown in the figure below (Fig. 3).

Figure 3. Competence Levels and Progression of the European Framework of Digital Competence for Teachers "DigCompEdu"



Reference: Cabero-Almenara et al., 2020, p. 278

The second framework is The International Society for Technology in Education (ISTE) - standards for teachers. ISTE, the framework of which the objective has been set as exploring the practice of teaching, supporting learner collaboration, revising orthodox approaches, and expanding autonomous learning was developed to address the needs of students' 21st century skills (Cabero-Almenara et al., 2020). ISTE supports teachers and students from all over the world in education and training compatible with the needs of the digital age by providing them with the knowledge, ideas, and implementations to bring digital skills into classrooms (Pérez-Escoda et al., 2019).

Another framework among the seven internationally accepted frameworks is the UNESCO ICT Competence Framework for Teachers (ICT-CFT). It is an initiative of the UN and its certain agencies to foster reform in the educational realm and economic development (UNESCO, 2011). Cabero-Almenara et al. (2020) emphasizes that the framework asserts that teachers are responsible in reflecting the competences they obtain to their students, promoting them to become citizens equipped with skills like collaboration, creativity, innovation, commitment, and determination. UNESCO (2011) explains that the framework for teachers has three basic approaches as; Technology Literacy, Knowledge Deepening, and Knowledge Creation, which involve providing students successively with the skills to use ICT for efficient learning, to implement school subject knowledge in real-life conditions, and to enable learners to constitute original knowledge for accomplishing and wealthy societies.

Figure 4. UNESCO ICT Competence Framework for Teachers

THE UNESCO ICT COMPETENCY FRAMEWORK FOR TEACHERS			
	TECHNOLOGY LITERACY	KNOWLEDGE DEEPENING	KNOWLEDGE CREATION
UNDERSTANDING ICT IN EDUCATION	Policy awareness	Policy understanding	Policy innovation
CURRICULUM AND ASSESSMENT	Basic knowledge	Knowledge application	Knowledge society skills
PEDAGOGY	Integrate technology	Complex problem solving	Self management
ICT	Basic tools	Complex tools	Pervasive tools
ORGANIZATION AND ADMINISTRATION	Standard classroom	Collaborative groups	Learning organizations
TEACHER PROFESSIONAL LEARNING	Digital literacy	Manage and guide	Teacher as model learner

Reference: UNESCO, 2011, p.3

Common Spanish Framework of Digital Competence for Teachers is another internationally accepted framework. Carretero et al. (2017, in Cabero-Almenara et al., 2020) states that the Common Spanish framework of Digital Competence for Teachers was developed based on DigComp Framework of Digital Competence for Citizens and adds that this framework is an all-encompassing model for educators and is very similar to DigCompEdu.

The fifth framework in the list is the British Framework of Digital Teaching. The framework was formed by the Education and Training Foundation (ETF) in cooperation with JISC [Joint Information Systems Company] company (Cabero-Almenara et al., 2020) The Education and Training Foundation (2019, as cited in Cabero-Almenara et al., 2020) defines 'The Digital Teaching Professional Framework' as a framework of competence for teaching and training practitioners in the FE (Further Education) and Training sector. ETF (2019) emphasizes that the framework is composed of seven elements which correspond to a variety of teaching contexts and activities as; planning your teaching, teaching approaches, helping learners develop skills for employment, teaching subjects peculiar to subject and industry, evaluation, accessibility and inclusion, and self-development, for each of which three levels are in question as; exploring, adapting, and leading. ETF (2019) communicates that the framework has areas matching with DigCompEdu, the ETF Professional Standards (PS) and with Jisc's Digital capabilities framework (Jisc). On the other hand, Pérez-Escoda et al. (2019) emphasizes that JISC had an approach to

the competence considering students' characteristics and their capabilities in a constantly changing atmosphere aligning with the professional areas that are not exempt from the digital change.

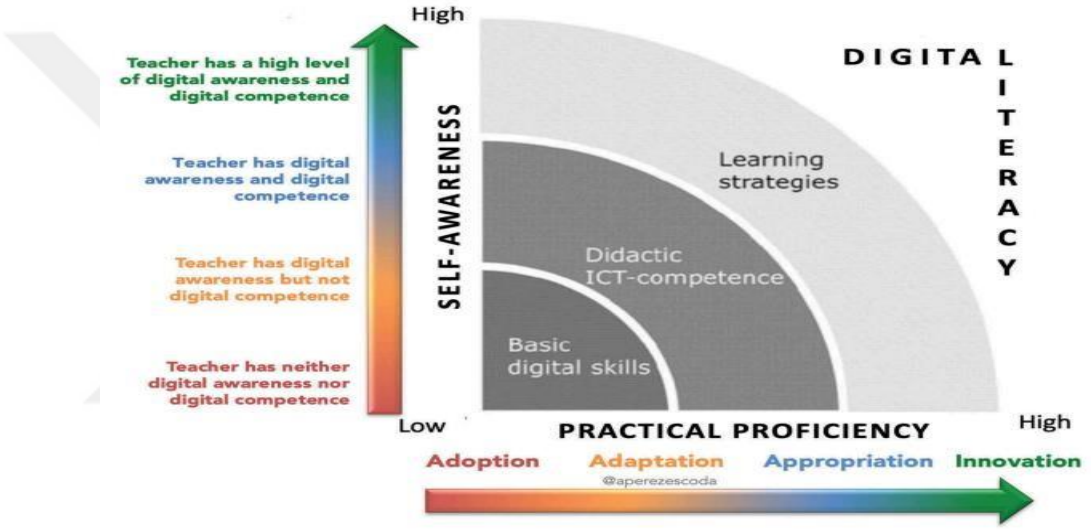
The Colombian Ministry of Education suggested the model with the goal of guiding teachers' professional development with the purpose of providing advancement in innovation through ICT in the realm of education (Cabero-Almenara et al, 2020). Being mentioned as one of the internationally recognized frameworks in Cabero-Almenara et al., (2020), ICT Competences and Standards for Chilean Teachers was developed by the Chilean Ministry of Education as an updated version of the 2006 framework in 2011 and is compatible with the UNESCO ICT competence framework having Digital Competence in the centre and surrounded by pedagogical, technical, managerial, social ethical and legal, developmental and responsibility related elements.

Pérez-Escoda et al. (2019) present several alternative models of digital literacy, including the Partnership for the 21st Century (P21) model (USA), the Krumsvik model (Norway), and the TPACK model (USA). Krumsvik's model was introduced explores cognition, metacognition, skills, learning strategies, self-efficacy and didactic-pedagogical aspects in building the model (Pérez-Escoda et al., 2019). Krumsvik (2008) explains the situation being the fact that Norway was the first country in the world to include digital competence as one of the five main competences. From the late 1980s on, the concept "competence" was attributed strong emphasis in the records of educational policy, and it is a fact that the concept became a focal point outdistancing the concept of knowledge in documents (Krumsvik, 2011). Having a more comprehensive meaning, the usage of the term *digital competence* outpaced the term *digital literacy* in Scandinavian context, which led to engaging *teachers' digital competence* to a more composite level being proficient in ICT within the pedagogical and educational contexts, differentiating teachers from average citizens who use ICT for basic personal purposes such as entertainment, internet banking, sending e-mails, and messages (Krumsvik, 2011).

Krumsvik's model suggests four major skills for accomplishing digital literacy; basic digital skills, didactic-ICT competence, learning strategies and digital literacy (Pérez-Escoda et al., 2019). The issue is emphasized with the prominence of

incorporating pedagogy, subjects and digital competence as a *competence journey* involving the processes of "adoption, adaptation, appropriation, innovation and the digital "hand-outs", and know-how" by Krumsvik (2011, p. 47). At the initial stage, adoption and adaptation, basic ICT skills keep teachers occupied and they are quite visible, and in the next stage, appropriation, teachers' teaching becomes immersed in ICT, and it becomes an element functioning in the background, and in the final stage of innovation, teachers become competent in developing pedagogical and didactic innovations involving ICT in their classes in a prolific way (Krumsvik, 2011).

Figure 5. Model of Development of Digital Literacy from Teaching Perspective

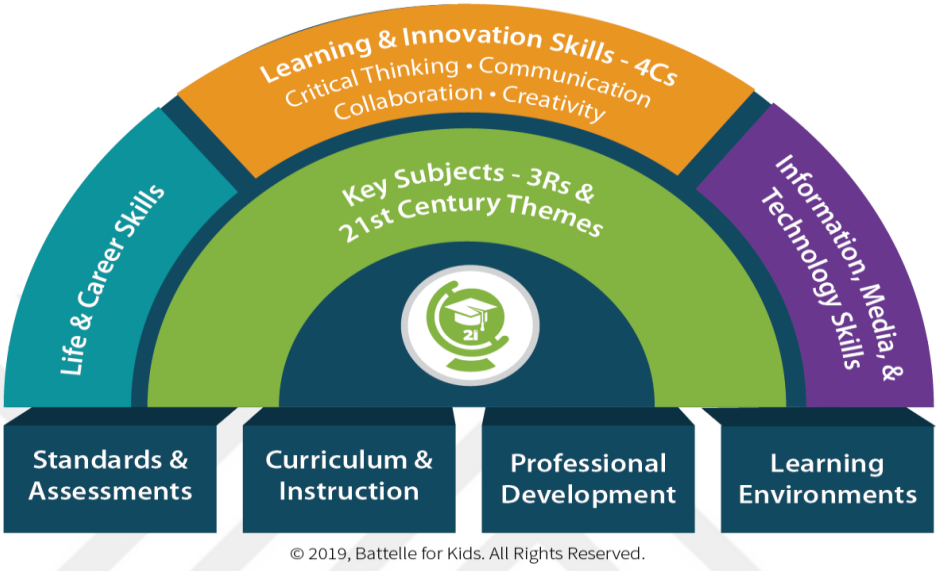


Reference: based on Krumsvik (2008, 2011) in Pérez-Escoda et al., 2019, p. 239

The P21 model, *the Partnership on 21st-Century Skills* was formed in the USA, in 2002 by leaders in the educational realm, policymakers and a professional entity collectively to set education in the digitalizing period from the point of K-12 initiatives (Pérez-Escoda et al., 2019). The model was developed by contributions from teachers, experts in the field of education and professional leaders to identify and implement the required skills and knowledge for success not only as a general success in life but also for the success in professional life (Battelleforkids.org, 2019). P21 involves ICT literacy among other 21st-century skills and identifies the basic elements, such as utilizing technology as a means of research, organization, evaluation and communicating information (Battelleforkids.org, 2019). As well as developing awareness about ethical and legal issues surrounding the digital world, the framework aims to guide the practitioners in utilizing digital technologies as means of

communication and networking efficiently to "access, manage, integrate, evaluate and create information to successfully function in a knowledge economy" (Battelleforkids.org, 2019, p. 6).

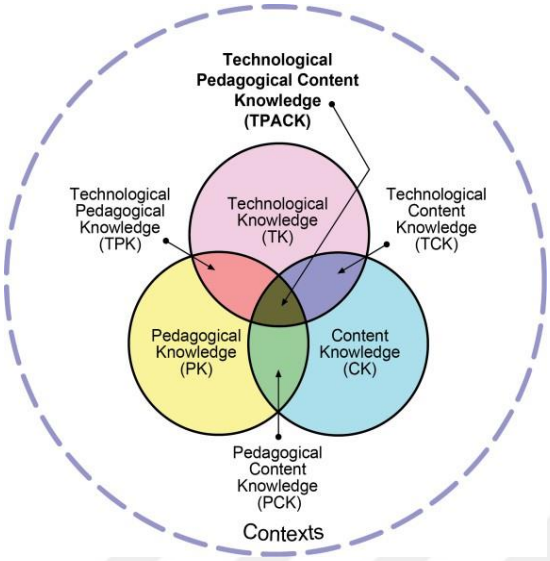
Figure 6. P21 Framework



Reference: (battelleforkids.org, 2019)

The TPACK framework is based on Lee Shulman's construct of pedagogical content knowledge (PCK) in the form of knowledge of technology integrated (Kohler & Mishra, 2009). TPACK is described as consisting of three elements of knowledge; content, pedagogy and technology, of which interaction forms a variety of adjustable knowledge required to incorporate technology into teaching (Kohler & Mishra, 2009). While *content knowledge* (CK) is described as the subject matter to be learned or taught by the teacher, and *pedagogical knowledge* (PK) is the metacognition of teaching and learning processes the teacher acquires, *technology knowledge* (TK) is stated as being difficult to give a certain definition due to the continuing developments and changes, which under these circumstances require practitioners' constant interaction with technology (Kohler & Mishra, 2009).

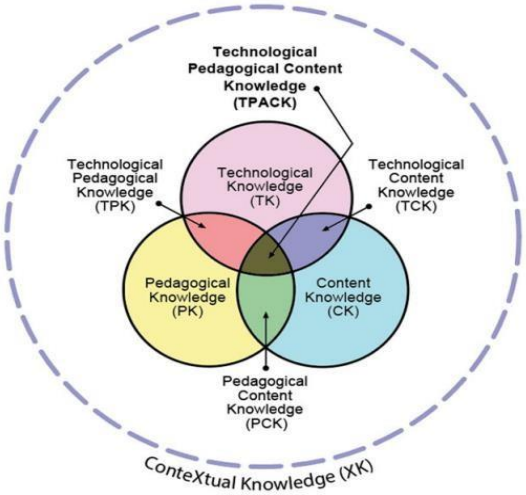
Figure 7: TPACK Model



Reference: (Rosenberg & Koehler, 2015, p. 3)

Rosenberg and Koehler (2015) underscore the importance of "context" for TPACK and note the lack of "context" in most of the research on TPACK. The framework includes a complicated interaction of its major elements and the interaction in question is bound to teachers' action area (Rosenberg & Koehler, 2015). However, Mishra (2019) suggested a revision of the figure for TPACK, emphasizing that the surrounding dotted circle has not been specified as knowledge but has been labelled as "Context" or "Contexts" and as TPACK is a framework representing teacher knowledge, the outer dotted circle also represents knowledge and should be labelled "Contextual Knowledge".

Figure 8. Revised TPACK Model



Reference: Mishra 2019, p. 2

Contextual Knowledge encompasses everything including a teacher's awareness of the present technologies, teacher's knowledge of the educational institution they work, and even the national regulations they are bound to and without the contextual knowledge the efficiency and accomplishment of TPACK would be limited (Mishra, 2019). The revised concept of TPACK is presented in figure 8 above.

2.4. European Framework for the Digital Competence of Educators

In this part of the study we will focus on DigCompEdu, the framework for the digital competence of educators, as we conducted our research through the framework. Caena and Redecker, (2019) state that the European Framework for the Digital Competence of Educators was designed to adjust with a variety of institutions and different contexts in different countries and is open to adaptation and development. Also, the framework builds a connection between the teachers' and the students' digital competence development and could be adapted to different educational environments (Caena & Redecker, 2019).

The aim of the framework is stated in the (Redecker, 2017, p. 7) as follows:

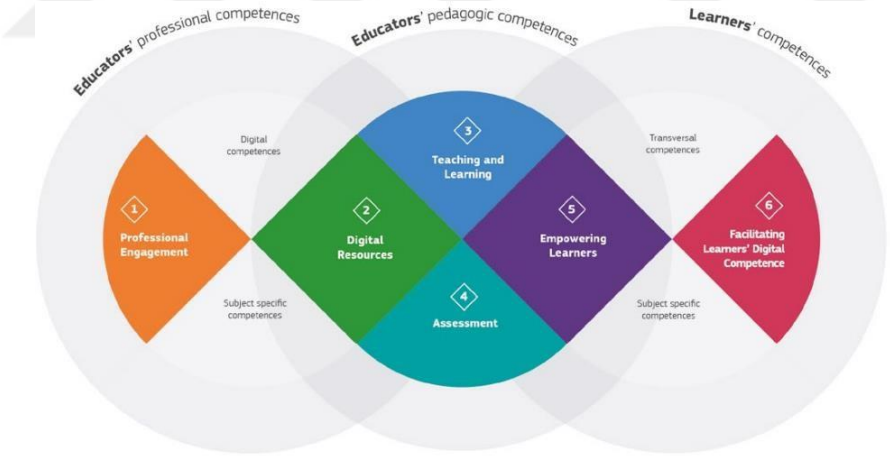
> It aims to help Member States in their efforts to promote the digital competence of their citizens and boost innovation in education. The framework is intended to support national, regional and local efforts in fostering educators' digital competence, by offering a common frame of reference, with a common language and logic.

Benali, M., et al, (2018) state that a framework for the Digital Competence of Educators (DigCompEdu) was published by the European Commission's Joint Research Centre (JRC) in November 2017 and that the framework addresses educators of all levels, encompassing general and vocational education and training, special needs education and non-formal learning contexts. The framework focuses mainly not on technical skills but on using digital technologies to reinforce training, teaching, learning and assessment (Benali, M., et al, 2018). According to Redecker (2017, p. 13) The DigCompEdu framework, attempts to combine the many instruments available for assessing educators' digital skills into a single, cohesive model. With the use of this paradigm, educators at all levels should be able to assess and improve their pedagogical digital competence.

The framework consists of six competence areas as shown in Figure 2 in the previous section. Among these areas, the first one is the *Professional Engagement,* in which the focus is the educator's work atmosphere, and the second one is the *Digital*

Resources, which investigates the origin, formation and delivery of digital sources, while the third area is the *Teaching and Learning*, which actually forms the core of the "DigCompEdu" framework focusing on know-how of the design, plan and carrying out the usage of the digital sources in a variety of levels during teaching and learning processes (Cabero-Almenara et al., 2021) The fourth area is the *Assessment*, which focuses on using digital instruments and designs for the appraisal and development of teaching and learning activities, which is followed by *Empowering Learners*, which prioritizes students' active participation in the teaching-learning process and support them to become independent learners by means of technology, and finally the sixth and the last area *Facilitating Learners' Digital Competence*, which focuses on improving students' digital competence and providing them with the knowledge of easy ways of using digital tools. (Cabero-Almenara et al., 2021). How these competence areas, educators' competence areas, educators' pedagogic competences, and learners' competences are designed and overlapping areas could be seen in the following figure (Figure 9).

Figure 9. DigCompEdu Areas and Scope

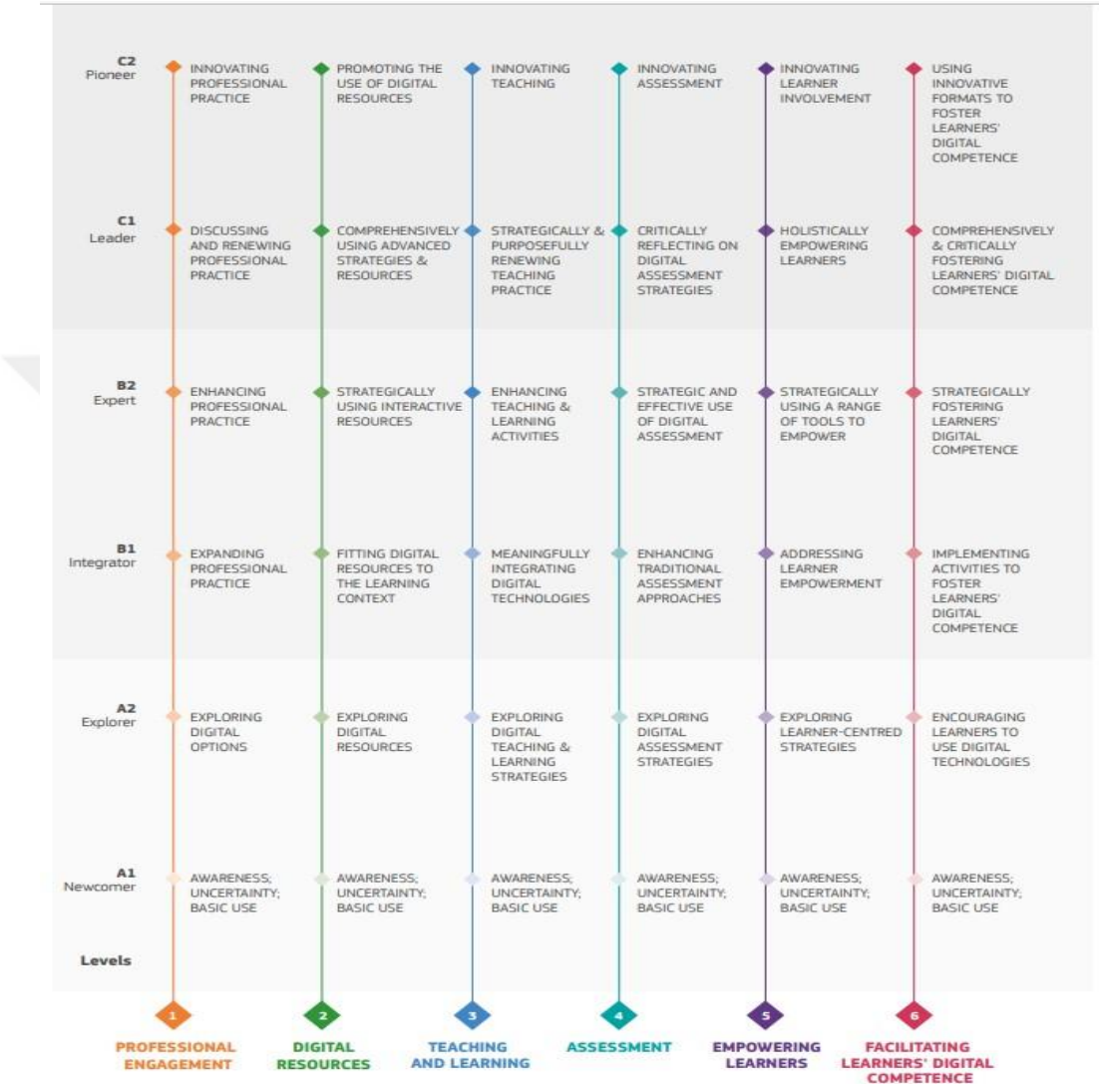


Reference: Redecker 2017, p. 15

In addition to the competence areas stated above, the framework consists of a *progression model* as shown in Figure 3 in the previous section. Redecker (2017, p. 28) communicates that the suggested progression model is intended to help teachers discover their own areas of strength and growth and does this by outlining different stages or levels in the development of digital competence, which are linked to the six

competence levels from A1 to C2 in the Common European Framework of Reference for Languages (CEFR) to make them more approachable (see Fig. 10).

Figure 10. DigCompEdu Proficiency Progression by Area



Reference: Redecker 2017, p.31

Redecker (2017) emphasizes that the progression model of DigCompEdu supports the continuous professional development of teachers, through which educators can see their present level and think about their future plans for their development, and it should not be taken as an instrument for performance evaluation. According to Redecker's (2017) framework, digital competence for teachers is categorized into six levels, each with its distinct characteristics and competences. The initial proficiency levels are the Newcomer (A1) and Explorer (A2), where teachers

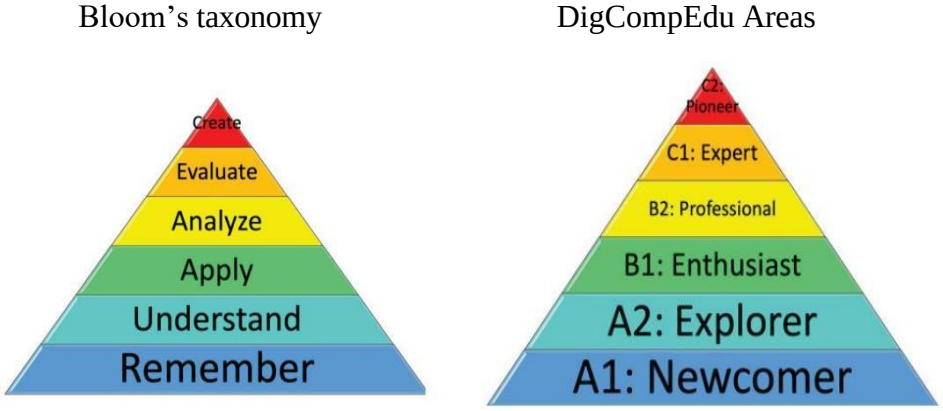
assimilate new information and develop their primary use. The following proficiency levels are the Integrator (B1) and Expert (B2), where teachers integrate their acquired knowledge and expand their digital competence practices.

The final two levels are the Leader (C1) and Pioneer (C2), where educators demonstrate their knowledge, adopt a critical approach to their digital practices, and strive to improve them. The Leader (C1) level is characterized by the ability to convey knowledge, guide others, and promote digital competence within an organization. The Pioneer (C2) level is the highest level of digital competence, where educators are capable of reflecting on their practices, identifying areas of improvement, and innovating digital solutions to enhance their teaching practices.

In conclusion, Redecker's (2017) framework offers a comprehensive approach to digital competence for teachers, with six distinct levels that outline the progression from acquiring knowledge to becoming a pioneer in digital innovation.

Also, this progression model has connection with Bloom's revised taxonomy for the cognitive domain, of which resemblance could be seen in the Figure (11) below (Kloos & Alario-Hoyos, 2021).

Figure 11. Bloom's Taxonomy and 6 Areas of the DigCompEdu



Reference: Kloos and Alario-Hoyos 2021, p.110

Kloos and Alario-Hoyos, (2021) emphasize that the three levels shown as *A*, *B*, and *C* in DigCompEdu progress levels correspond to *lecturer (A)*, *facilitator (B)*, and *coach (C)*,in addition to which each level has a regular and advanced level. For example, A1 and A2, B1 and B2. Kloos and Alario-Hoyos, (2021) explain that there

exists a small leap between numbers in the progress level, from 1 to 2 in the same letter category (A1, A2), yet the leap between different letters is bigger, from A to B or B to C, which Redecker (2017) also explains the leaps being similar to the conceptual frame of CEFR as to which the connection was mentioned above. Although levels A1 and A2, B1 and B2, and C1 and C2 are closely related, there is a cognitive leap between A2 and B1 and B2 and C1, respectively. This is reflected in the way that the CEFR arranges the six levels into three blocks. This also applies to the DigCompEdu competence ladder (Redecker, 2017, p.28).

Having categorized the three levels as *lecturer (A)*, *facilitator (B)*, and *coach (C)*, Kloos & Alario-Hoyos, (2021) state that due the depth of the leaps between number and letters in the levels, an educator focusing on knowledge transfer only (A1) is *a lecturer*, while an educator supporting and applying active learning (C2) is *a coach.*

As stated in section 2.3 Frameworks for Digital Competence, a variety of frameworks for digital competence has been developed by various organizations and institutions. Up to DigCompEdu in 2017, JRC, the designer of the framework, has developed several other frameworks of digital competence in different areas as well. These are; firstly, DigComp. in 2013, a more general framework for digital competence and it was later named as DigComp 1.0, secondly, DigCompOrg in 2015, targeting educational institutions, and next, DigComp 2.0 in 2016, which aims inclusion of all citizens, not a specific professional or social group, the fourth, DigComp 2.1 inclusive of all citizens like the previous version, and finally DigCompEdu, the framework for educators (Mattar et al., 2022). The frameworks designed by the European Commission were developed and confirmed by a vast environment of study and reports (Caena & Redecker, 2019; Ferrari, 2012, as cited in Mattar et al., 2022). According to research administered by Cabero-Almenara et al. (2020, in Mattar et al., 2022) and among several frameworks assessed by the experts DigCompEdu was rated the best among them. (Mattar et al, 2022) In addition, Cabero-Almenara et al (2021b) also state that they chose DigCompEdu for their study as it is the most appropriate model the scientific literature on DC of university educators considered.

2.5. DigCompEdu in Higher Education and Turkish Context

It is expressed in section 2.2 *Teachers and Digital Competence* that educators' approach to technology is of utmost importance to form a digitally competent society. In terms of higher education, Santos et al., (2021) emphasize that digital competence has become an essential element in higher education and will maintain its prominence in the future regardless of format, face-to-face, distance or hybrid, which forces universities to accept this fact as educational activities are realized not limited to physical campuses but could take place without restraints of time and place. The old educational paradigm could be changed by the challenge of the universities and it is fundamental to incorporate digital competences into their educational processes (Amador et al., 2017; Levis, 2011; Rengifo-Millan, 2015, as cited in Bilbao-Aiastui et al., 2021) Cabero-Almenara and Guillén-Gámez, et al. (2021) communicate that a connection has to be made between the demands of the digital world and the tasks of the university educators in the twenty-first century. Santos et al., (2022) state that in recent years, digital competence is recognized as a vital skill for university educators not only in their subject-specific area but also in terms of pedagogical approach assisting their educational activities to develop student learning and providing them with the qualifications for life and work in a digitalized society. There are authors that emphasize the requirement for regular training for university professors through seminars, courses, conferences, workshops and as such (Alexander et al., 2019; Arruti et al., 2020; Cabero-Almenara & Llorende-Cejudo, 2020; Ramírez-Montoya, 2020, as cited in Bilbao-Aiastui et al., 2021). In their research, which is based on the DigCompEdu framework, about the digital competence of higher education educators in Andalusia, Spain with 2180 university professors in a variety of disciplines, Cabero-Almenara and Guillén-Gámez, et al. (2021) have found that training is an important element in digital competence of university professors in order to provide a quality teaching-learning environment and the findings of the study displayed the lack of training for both male and female educators, and the fact that a basic-intermediate level is no longer sufficient. The research concluded that Spanish universities must organize training sessions to develop the digital competence of their educators. The research also suggests that to motivate the professors for such courses, their working conditions should be improved.

In another research, Cabero-Almenara et al., (2021) communicate the important aspects that university teachers must have as; mobile learning, analytical technologies, mixed reality, artificial intelligence, blockchain, and virtual assistants. The following variables are also mentioned as factors contributing to the development of digital competence of teachers: (a) the teaching experience, (b) gender, implying different uses, (c) the teachers' age, usually in favour of younger teachers, (d) as a determining factor for the acquisition of digital skills, the time spent on technology, (e) profiles on social networks, (f) creating teaching content on the web, such as, blogs, and wikis, (g) creating digital content like online questionnaires, games, and similar activities, (h) integration of digital games (i) generating virtual realms to produce content. In a recent study conducted by Bilbao-Aiastui et al. (2021), a systematic literature review was performed using the DigCompEdu framework. The researchers examined 30 papers obtained from the WoS and SCOPUS databases. The findings of the study suggest that the digital competence level of university professors is moderate. Furthermore, the items related to Learners' Empowerment and Facilitating Students' Digital Competence were found to be the least referenced in the reviewed papers. The research indicates that it is necessary to provide ongoing training sessions for university instructors, with the help of DigCompEdu.

Santos et al. (2021) conducted a study on university professors in Portuguese context to analyze the differences related with changing elements of teaching and the structure of the university in teachers' proficiency level in digital competence. The study was based on DigCompEdu as a conceptual framework. The investigation was into the digital competence levels of professors in higher education and their teaching-wise and institution-wise relation. Overall, findings of the study displayed that, the general efficiency level of digital competences was B1 - integrator for the educators in higher education institutions, and that indicated that there was great need for improvement regarding professional development, self-exploration pedagogically, and digital instruments (Santos et al., 2021).

There are a considerable number of studies assessing the proficiency levels of university educators in digital competence both for self-exploration and determining the needs. While a variety of conceptual frameworks have been used to study digital competences, the studies reviewed above have used DigCompEdu, which is the focus of this present study. In addition, DigCompEdu has become a conceptual framework

for many researchers and institutions developing projects to further digital competence of their educators. The University of Copenhagen is one of them and they created a project - Competences for Universities - Using Technology in Education" (CUTE) - to develop digital competences for university teaching (The University of Copenhagen, n.d.) The project website states the fact that educators in higher education are mainly hired and awarded for their studies and research, which is a factor in slowing down the development of digital teaching competences, and it usually becomes bound to personal willingness and efforts of the educators. They state that they expect to create a change in this realm on an institutional level and inspire others as well.

In terms of English language teachers' digital competence, based on the DigCompEdu framework, one of the significant studies found in the literature is the one by Benali et al. (2018). Benali et al, conducted their research on 160 English language teachers in Morocco. The researchers explain the rationale for the research as the absence of studies on the digital competences of teachers and learners in the region. The researchers appraise the implications and the conclusion of the study useful in terms of supporting teachers' self-reflection, motivation to get more involved in pedagogical digital competences, and suggests the availability of DigCompEdu CheckIn tool in national education portals to provide teachers with insights on the subject (Benali et al., 2018).

In the Turkish context, there have been a variety of studies and research on digital competence of teachers, most of which focusing mainly on ICT literacy, technological competence, online teaching, and especially pre-service teachers' attitudes, approaches, competences on technology starting from late 2000s to late 2010s (Goktas et al., 2008; Yüksel & Kavanoz, 2010; Ersanlı, 2016; Sariçoban et al., 2019; Ersin et al., 2020). However, as we focus on digital competences, which is the most comprehensive concept evolved through terms like ICT, technology literacy and as such, we stay focused on the research related to DigCompEdu, and include some of the relevant studies below.

A recent study by Fidan and Yelegen (2022) investigated Turkish teachers' digital competences regarding various variables and their needs for digital competence. The research used the DigCompEdu, which was modified for the Turkish

context by Toker et al. (cited in Fidan & Yelegen, 2022). However, the study focused on a very small population of teachers from a variety of branches in the Western Black Sea region in state schools. The researchers state that the digital competence levels of the participants have been examined through different fields such as, gender, level of education, years of experience, specific subject, hours spent on the internet daily, and using web 2.0 tools. The findings will not be repeated or discussed here, yet the overall impression is that the instrument used had noteworthy implications for the assessment of teachers' competences and it is a trustworthy tool for further suggestions both for the teacher personally and the institutions generally.

A recent study by Canbulat (2022) used DigCompEdu to assess the development of Turkish pre-service EFL teachers' digital competence. The study was a qualitative case study that included six pre-service EFL teachers from a state university. The researcher aimed to identify the participants' digital competence both before and after the study, their digital competence development, their future digital competence training, and how they can transfer their digital competence into teaching practice. The DigCompEdu survey, interviews, reflection papers, and performance tasks were used as data collection instruments. The researcher discovered that the perceived digital competence of pre-service EFL teachers increased gradually and is a multifaceted process impacted by a range of factors.

Furthermore, a recent addition to the literature is a PhD thesis by Karacan (2023), which focuses on pre-service and in-service English language teachers. According to Karacan (2023), the research findings highlighted the importance of hands-on teaching practices for pre-service teachers. The study also found that participants who actively participated in classroom teaching showed a higher level of digital competence. Regarding the findings for the in-service teachers, it is crucial to note the significant impact of continuing professional development training sessions on their ability to adapt to the ever-evolving digital landscape (Karacan, 2023).

In summary, digital competence has great importance in the realm of education in the modern world. It is clear that the digital competence of university educators has gained higher importance to create a digitally competent society. This fact emphasizes the need to integrate these competences into higher education institutions. DigCompEdu not only emphasizes the use of digital technologies by the educators but also emphasizes the fact that educators should help their students to become competent in using these technologies and without ignoring ethical aspects of them. Studies conducted by using the DigCompEdu revealed the impact of digital competence but also showed the need of training for the educators on the subject. Numerous studies have demonstrated that educators generally have intermediate levels of competence, and this shows the significance of professional development in order to stay up to date with technological changes.

3. METHODOLOGY

This chapter describes the methodology used in the current thesis in detail. The research questions that guide the study are presented in Section 3.1. Section 3.2 contains information about the study sample. Section 3.3 describes the data collection tool that was used. Section 3.4 describes the data collection procedure. Finally, Section 3.5 provides information on the data analysis techniques and procedures used.

3.1. Research Questions and Hypotheses

The following research questions guided this study:

1. What is the EFL instructors' level of engagement with digital resources?
2. Is there a difference between the self-reported and DigCompEdu-assessed digital competence levels of Turkish EFL instructors?
3. Do the EFL instructors' levels of engagement with digital resources differ according to the independent variables (age, gender, and years of experience)?
4. Do the EFL instructors' digital technology use in class differ according to their digital competence level?
5. What are the digital tools used in class?

3.2. The Study Sample

The snowball method was used to recruit participants. The link to an online survey was emailed to prospective participants in an initial call for participation, along with a request to share the link with other colleagues. One hundred instructors of English as a Second Language from foundation and state universities in Turkey responded to the survey. Participation in the study was entirely voluntary, and the survey did not gather any personally identifiable information. As Table 1 displays, 28% of the participants were male, 71% were female, and 1% preferred not to disclose their gender. In terms of age distribution, most of the participants were between the ages of 25-29 and 30-39, (27% and 40%, respectively), with participants over 60

constituting the smallest portion (1%) of the sample. Regarding the years of teaching experience, there was a relatively equitable distribution among the various categories. Participants with 6–9 years of experience made up the largest group (24%), closely followed by those with 10–14 years of experience (20%). Regarding the distribution of digital technology use, a substantial portion of the participants (25%) reported using digital technologies for 6-9 years, followed closely by those with 4-5 years of experience (23%). 21 participants (21%) noted that they used digital technologies for 1-2 years, 14 participants (14%) for 10-14 years, 12 participants (12%) for 15-19 years, 4 participants (4%) for over 20 years, and only 1 participant noted using digital technologies for less than 1 year (1%).

Table 1. Demographic Information of the Study Sample

Variable		**n**	**%**
Gender	Male	28	28.0
	Female	71	71.0
	Prefer not to say	1	1.0
Age	Under 25	2	2.0
	25 - 29	27	27.0
	30 - 39	40	40.0
	40 - 49	21	21.0
	50 - 59	9	9.0
	Over 60	1	1.0
	Prefer not to say	0	0.0
Years of teaching	1 - 3	9	9.0
	4 - 5	14	14.0
	6 - 9	24	24.0
	10 - 14	20	20.0
	15 - 19	14	14.0
	20 or more	18	18.0
	Prefer not to say	1	1.0

3.3. Data Collection Tool

For data collection, an online self-assessment tool developed by MapUS was utilized. It is a free online tool that enables individuals and organizations to assess their digital competence based on the European Digital Competence Framework for Educators (Table 2).

Table 2. European Framework for the Digital Competence of Educators.

Competence	Aspect
Professional Engagement	Organizational Communication
	Professional Collaboration
	Reflective Practice
	Digital CPD
Digital Resources	Selecting
	Creating and Modifying
	Managing, Protecting, Sharing
Teaching and Learning	Teaching
	Guidance
	Collaborative Learning
	Self-regulated Learning
Assessment	Assessment Strategies
	Analysing Evidence
	Feedback and Planning
Empowering Learners	Accessibility and Inclusion
	Differentiation and Personalization
	Actively Engaging Learners
Facilitating Learners' Digital Competence	Information and Media Literacy
	Communication
	Content Creation
	Responsible Use
	Problem Solving

As displayed in Table 2, the framework consists of 22 competences, divided into six major competence areas: *Professional Engagement* focuses on the professional

environment; *Digital Resources* focuses on locating, producing, and disseminating digital materials; *Teaching and Learning* focuses on managing and organizing the use of digital tools in education; and *Assessment focuses* on assessment methods and digital tools. Another major competence area is *Empowering Learners,* which pinpoints accessibility and inclusion, differentiation and personalization, and actively engaging learners. The last major competence area is *Facilitating Learners' Digital Competence*, which deals with information and media literacy, communication, content creation, responsible use, and problem-solving.

The first section of the survey asks respondents to indicate their subjective assessment of their digital competence level in four progressive levels, ranging from A1 (newcomer) to C2 (pioneer). The survey is composed of the questions for the six main competence areas and twenty-two competences. Initially the main competence area is defined, and the competences in that main area are investigated. For each competence there exists an introductory statement and participants are asked to reflect the best option for their current digital competence level among the five options. Subsequent to the competence levels the questionnaire includes sections for demographic information for gender, age, years of experience, school type, years of utilizing digital technologies in teaching, school subjects, digital tools being used by the instructor, and the age of students. At this point, it is worth reminding that this data collection tool addresses all teachers, in a variety of school levels and subjects. The questionnaire ends with a section that consists of Likert scale questions on *private use of digital technologies*, and *digital environment* for the participants. Finally, the participant is asked to reflect on their digital competence as a teacher.

3.4. Ethical Issues

The ethical approval of the study was granted by the Yıldız Technical University Ethical Committee (28.12.2022, 2022-12). Permission to use the survey was requested from MapUs via their website. After receiving their authorization to utilize the tool, an email was dispatched to English language instructors extending an invitation to partake in the research. The email explicitly stated that participation was voluntary, and that confidentiality would be upheld. DigCompEdu hyperlinks were incorporated into the emails. For ethical reasons, we refrain from disclosing information pertaining to the universities and the participants.

3.5. Data Analysis

The data obtained from the survey was analyzed using SPSS 27.0 software. A confidence level of 95% was used. Descriptive statistics, including the mean, standard deviation, minimum, maximum, and frequency, were provided for the measurements. The data were examined for normal distribution prior to determining the appropriate test type. According to Hopkins and Weeks (1990), skewness and kurtosis values falling within the range of +3 to -3 are indicative of a satisfactory degree of normality. Based on the findings, it was concluded that the scale scores follow a normal distribution (skewness and kurtosis coefficients) (see Table 3). As a result, the analysis utilized parametric methods, operating under the assumption of a normal distribution. The relationship between self-reported and DigCompEdu-assessed digital competence levels of EFL instructors was analyzed for statistical significance using the Chi-square test. Independent samples t-tests and one-way ANOVA were utilized to compare scale scores across group.

Table 3. Descriptive Statistics

	Min	Max	Mean	ss	Skewness	Kurtosis
Professional Engagement	40	100	69.50	12.46	-0.12	-0.45
Digital Resources	20	100	70.73	15.62	-0.68	0.36
Teaching and Learning	40	100	71.35	13.12	-0.28	-0.30
Assessment	33	100	67.67	15.44	-0.14	-0.62
Empowering Learners	27	100	66.20	15.89	-0.27	-0.14
Facilitating Learners' Digital Competence	28	96	65.28	14.66	0.10	-0.50
Organisational Communication	40	100	73.00	14.87	-0.08	-0.26
Professional Collaboration	20	100	66.20	17.68	-0.21	0.26
Reflective Practice	20	100	69.20	19.16	-0.20	-0.34
Digital Continuous Professional Development (CPD)	20	100	69.60	19.17	-0.47	-0.04
Selecting Digital Resources	20	100	70.40	17.40	-0.39	-0.15
Creating and modifying digital resources	20	100	68.60	23.66	-0.93	0.09
Managing, protecting and sharing digital resources	20	100	73.20	25.30	-0.64	-0.50
Teaching	40	100	73.40	17.99	-0.31	-0.60
Guidance	20	100	74.40	17.77	-0.56	0.11

Collaborative Learning	20	100	67.60	18.81	-0.09	0.35
Self-regulated Learning	20	100	70.00	21.93	-0.63	-0.05
Assessment strategies	20	100	71.20	19.35	-0.51	0.06
Analysing evidence	20	100	60.00	21.08	0.21	-0.68
Feedback and planning	40	100	71.80	17.08	-0.19	-0.53
Accessibility and Inclusion	20	100	66.60	22.39	-0.20	-0.44
Differentiation and Personalisation	20	100	58.20	25.44	0.08	-1.11
Actively Engaging Learners	20	100	73.80	16.98	-0.36	0.13
Information and Media Literacy	20	100	60.80	22.00	0.01	-0.99
Digital Communication and Collaboration	20	100	65.60	20.12	-0.23	-0.19
Digital Content Creation	20	100	71.00	18.06	-0.57	0.54
Responsible Use	20	100	63.60	22.27	-0.23	-0.47
Digital Problem Solving	20	100	65.40	19.66	0.08	-0.29
Knowledge	30	100	69.40	15.88	-0.29	-0.60
Skill	46	93	68.13	11.39	-0.03	-0.69
Attitude	30	100	68.75	14.38	-0.39	-0.07

4. FINDINGS

This chapter gives the results and examines them in connection to the literature that was reviewed. The findings are given in line with the sequential arrangement of the research questions.

4.1. EFL Instructors' Digital Competence Level

This section centers on the primary research question, which investigates the self-reported digital competence levels of EFL instructors in comparison to those defined by the DigCompEdu framework. At the survey's inception, instructors were prompted to evaluate their digital competences, using a scale from A1 (Newcomer) to C2 (Pioneer), to gauge their initial self-perception of digital proficiency. This self-assessment aimed to establish a baseline for their digital engagement, categorized as follows (Agudelo et al., 2023; Economou et al., 2023; Maghfiroh et al., 2023):

- **A1 (Newcomer)** - Individuals at the initial stage of digital competence.
- **A2 (Explorer)** - Educators beginning to incorporate digital tools into their teaching.
- **B1 (Integrator)** - Teachers who integrate digital technologies with pedagogical practices.
- **B2 (Expert)** - Instructors with advanced digital skills, capable of selecting and using digital tools effectively.
- **C1 (Leader)** - Educators who lead and innovate with digital technologies in educational settings.
- **C2 (Pioneer)** - Educators who are at the forefront of integrating digital innovation in education.

Participants' initial responses were then compared to their performance on subsequent sections that detailed their competences across six main areas and 22 specific skills as according to DigCompEdu (2023) standards. This comprehensive evaluation

concluded with a repetition of the initial question, allowing for a direct comparison between participants' self-perceived and actual digital competences as measured against the DigCompEdu framework's standards. This methodology facilitates a nuanced understanding of EFL instructors' engagement with digital resources.

The self-reported and DigCompEdu-assessed digital competence levels of EFL instructors are presented in Table 4. An overwhelming majority (37%) of respondents classified themselves as experts (B2), with leaders (C1) and integrators (B1) following closely with 22% and 21%, respectively. While 13% of participants described themselves as pioneers (C2), 7% described themselves as explorers (A2).

Table 4. Self-Reported and DigCompEdu Assessed Digital Competence Levels

	Self-reported		**DigCompEdu assessed**	
Level	**n**	**%**	**n**	**%**
A2 (Explorer)	7	7.0	3	3.0
B1 (Integrator)	22	22.0	22	22.0
B2 (Expert)	37	37.0	42	42.0
C1 (Leader)	21	21.0	25	25.0
C2 (Pioneer)	13	13.0	8	8.0

The self-reported levels of digital competence exhibited a diverse range of distribution among the participants. In this regard, the respondents described themselves either as an expert (37%), integrator (22%), or leader (21%). This distribution also underscores the importance of promoting continuous learning and development in digital skills to meet the diverse needs of the participants at the explorer and integrator levels. Furthermore, it is critical to ensure that instructors who self-identify as Expert, Leader, or Pioneer levels receive appropriate training to ensure they remain current with digital advancements and advocate for the Pioneer level. On the other hand, Table 5 below displays the participants' actual digital competence level according to DigCompEdu.

Instructors' actual digital competence levels were mostly aligned with their self-reported digital competence levels: 42% were at the B2 (Expert) level, while 25% were at the C1 (Leader) level. However, compared to their self-reported percentage, there is

a slightly lower representation of participants at the A2 (Explorer) level (3%) and the C2 (Pioneer) level (8%).

4.2. Self-Reported vs. DigCompEdu-Assessed Digital Competence Levels

This section delves into the comparison of self-reported and actual digital competence levels as assessed through the DigCompEdu framework. A comparison between instructors' self-reported digital competence and their digital competence assessed through DigCompEdu revealed statistically significant differences. Table 5 below provides a detailed breakdown of participants' self-reported and actual digital competence levels. The analysis revealed that a large majority of participants who considered their level as A2+B1 (Integrator+Explorer) (72.4%) accurately reflected their actual competence level under the DigCompEdu assessment. Similarly, a substantial portion of respondents who identified themselves as B2 (Expert) (75.7%) were found to align with this level in their actual digital competence. However, a stark contrast emerged among participants who self-reported their level as C1 (Leader), with only 13.5% accurately fitting into this classification. Moreover, none of the participants self-identified as C2 (Pioneers) were verified as such through their actual digital competence assessment. This discrepancy between self-reported and actual digital competence levels suggests that participants may have overestimated their abilities. As displayed in Table 5, 72.4% of participants who identified themselves as within the A2+B1: Integrator+Explorer categories accurately matched their actual digital competence level in this category, indicating a high degree of self-awareness among these instructors. Conversely, among those who self-identified as B2: Experts, 75.7 were accurately classified under the same category based on the DigCompEdu framework, reflecting a strong alignment between perceived and actual expertise in this group. However, a notable difference emerges for participants self-reporting as C1: Leaders, with only 13.5% accurately fitting this designation according to the DigCompEdu assessment. This difference suggests a tendency among some instructors to overestimate their digital competences at higher levels of expertise. Similarly, no participants who self-identified as C2: Pioneers were found to accurately correspond to this highest level of digital competence, underscoring a significant overestimation of skills among this group.

A Chi-square test was conducted to assess the relationship between self-reported and DigCompEdu-assessed digital competence levels among EFL instructors. There was a statistically significant difference at the $p < 0.001$ level in digital competence across different levels of expertise: $X^2(3, N=95) = 89.368$, $p<.001$. This result underscores the importance of objective evaluations in accurately assessing an instructor's digital competence and highlights potential overestimations of digital skills among EFL instructors, particularly those who perceive themselves as leaders or pioneers.

Table 5. Self-Reported Digital Competence vs. Actual Digital Competence

		Current digital competence level								**X^2**	**p**
		A2+B1		**B2**		**C1**		**C2**			
		n	**%**	**n**	**%**	**n**	**%**	**n**	**%**		
Digital competence level	A2+B1 (Integrator+Explorer)	21	72.4	4	10.8	0	0.0	0	0.0	89.368	**0.000**
	B2 (Expert)	7	24.1	28	75.7	5	23.8	2	15.4		
	C1 (Leader)	1	3.4	5	135	15	71.4	4	30.8		
	C2 (Pioneer)	0	0.0	0	0.0	1	4.8	7	53.8		

4.3. EFL Instructors' Levels of Engagement with Digital Resources

The second research question aimed to investigate EFL instructors' engagement with digital resources, considering factors age, gender, and years of experience. Initially, we present the self-reported digital competence levels of participants, segmented by these independent variables. Subsequently, we contrast these self-assessments with the digital competence levels as determined by the DigCompEdu framework. This comparative analysis seeks to uncover any disparities or correlations between the independent variables and both self-reported and framework-assessed digital competences.

The exploration begins with an examination of the participants' self-reported digital competence, categorized by age, gender, and teaching experience. This approach offers initial insights into how these demographic factors might influence instructors' perceptions of their own digital competences. The analysis then extends to include an evaluation of digital competence as assessed by the DigCompEdu framework, providing an objective measure against which to gauge the accuracy of

self-reported competences. One sample t-tests and one-way ANOVA were utilized to compare instuctors' digital competence levels as assessed through DigCompEdu across groups.

4.3.1. Gender and the Level of Engagement with Digital Resources

The male participants were predominantly at B2 (Expert) (32.4%) and C1 (Leader) (30.0%) levels. The Integrator+Explorer category had the lowest representation among men (27.6%). In contrast, the proportion of female participants exhibited a more balanced distribution across various levels of digital competence. Specifically, the Integrator+Explorer level comprised the smallest share (72.4%), while the C2 (Pioneer) level comprised the highest (84.6%). These findings suggest that there may be a gender disparity in digital competence levels, with men being more concentrated in the higher levels and women being more evenly distributed. Therefore, it is important to further investigate the factors contributing to these differences and develop strategies to promote equal opportunities for both genders in digital education.

Table 6. Instructors' Digital Competence Levels Based on Gender

		Digital competence level								X^2	p
		A2+B1 (Integrator+ Explorer)		B2 (Expert)		C1 (Leader)		C2 (Pioneer)			
		n	%	n	%	n	%	n	%		
Gender	Man	8	27.6	12	32.4	6	30.0	2	15.4	1.346	0.733
	Woman	21	72.4	25	67.6	14	70.0	11	84.6		

A t-test was conducted to compare the mean scores of various aspects of digital competence between male and female participants. The p-values associated with the t-tests were examined to determine if there are statistically significant differences between genders. Statistically significant differences were detected between male and female participants in two domains of digital competence: Organisational Communication and Guidance for digital competence.

Female participants (M=74.65, SD=14.33) scored significantly higher in Organisational Communication than male participants (M=67.86, SD=14.75) (t(7)= -2.107, p = 0.038). Also, female participants (M=77.46, SD=17.54) scored significantly

higher in providing Guidance than male participants (M=67.14, SD=16.52) (t(20)= -2.679, p = 0.009). However, there were no statistically significant differences in other aspects of digital competence between the two gender groups. These findings suggest that gender may play a role in certain aspects of digital competence, specifically in Organisational Communication and Guidance. Further research is needed to explore the underlying factors contributing to these differences and to determine if similar patterns exist in larger and more diverse populations.

4.3.2. Age and the Level of Engagement with Digital Resources

The distribution of digital competence levels among participants under 30 was generally balanced, with B2 (Expert) (35.1%) and Integrator+Explorer (27.6%) being the most prevalent. Among those aged 30-39, the C1 (Leader) level had the largest proportion (52.4%), whilst the 50 and beyond age group had the lowest representation in all categories. This suggests that younger EFL instructors may be more comfortable and proficient in using digital resources compared to their older counterparts. The data also indicated a potential need for targeted training and support for instructors in the 50 and above age group to enhance their digital competence. It may be beneficial to create opportunities for intergenerational collaboration, where younger instructors can share their expertise with their older colleagues, fostering a supportive learning environment for all. This approach can also help bridge the digital divide among instructors, as some may have limited access to technology or lack confidence in using it.

Table 7. Instructors' Digital Competence Levels Based on Age

		Digital competence level								X^2	p
		A2+B1 (Integrator+ Explorer)		B2 (Expert)		C1 (Leader)		C2 (Pioneer)			
		n	%	n	%	n	%	n	%		
Age	- 30	8	27.6	13	35.1	5	23.8	3	23.1	11.358	0,228
	30 - 39	13	44.8	8	21.6	11	52.4	8	61.5		
	40 - 49	6	20.7	11	29.7	2	9.5	2	15.4		
	50 +	2	6.9	5	13.5	3	14.3	0	0.0		

As for the age group differences, another t-test was conducted to compare the mean scores of various aspects of digital competence across different age groups. The F-test was utilized to assess statistically significant differences among age groups. Overall, the F-test results indicated that there were no statistically significant differences in the mean scores of the various aspects of digital competence across the different age groups because the p-values for all aspects of digital competence were greater than the conventional significance level of 0.05 ($p > 0.05$).

In summary, the study did not find any significant differences in the mean scores of digital competence aspects among participants belonging to different age groups. This implies that educators across different age groups showed similar levels of digital competence in the aspects examined. The findings suggested that age may not be a decisive factor in determining educators' digital competence in the specific areas investigated in this study.

4.3.3. Experience and the Level of Engagement with Digital Resources

Participants with 1-5 years of teaching experience, the distribution was relatively even across all digital competence levels. Among the group with 6-9 years of teaching experience, the majority (38.1%) hold the C1 (Leader) level, while there are no participants at the C2 (Pioneer) level. For participants with 10-14 years of experience, the majority fell into the B2 (Expert) level (25.0%). Interestingly, in the 20 or more years of experience group, there was no representative of C2 (Pioneer) level.

These findings suggested that as teachers gained more experience, they tended to reach higher levels of digital competence, with a significant number achieving the C1 (Leader) level. However, it is worth noting that very few participants in the study who were teaching for 20 or more years reached the highest level of digital competence. This finding indicated a potential gap in their technological skills. Despite their extensive experience and high level of competence, they may be struggling with more advanced technological skills, such as integrating online or mobile games into the classroom. This example highlights the potential gap in technological skills that some long-time teachers may face.

Table 8. Instructors' Digital Competence Levels Based on Years of Experience

		Digital competence level								X^2	p
		A2+B1 (Integrator+ Explorer)		B2 (Expert)		C1 (Leader)		C2 (Pioneer)			
		n	%	n	%	n	%	n	%		
Years of teaching	1 - 5	8	27.6	9	25.0	6	28.6	0	0.0	15.989	0.168
	6 - 9	5	17.2	5	13.9	8	38.1	6	46.2		
	10 - 14	6	20.7	9	25.0	1	4.8	4	30.8		
	15 - 19	5	17.2	5	13.9	2	9.5	2	15.4		
	20 +	5	17.2	8	22.2	4	19.0	1	7.7		

4.4. EFL Instructors' Digital Competence Level and Technology Use in Class

Regarding the association between the use of digital technology in the classroom and the level of digital competence, our analysis revealed that there is no statistically significant relationship between these variables (p = 0.340). This outcome indicates that an increased usage of digital technologies by participants does not necessarily correlate with higher levels of digital competence. Furthermore, our findings indicated that there was no statistically significant link between the current utilization of digital technologies and the level of digital competence (p = 0.440). This suggests that participants who have more experience in using digital technologies do not necessarily possess higher digital competence levels. These findings suggest that the more individuals engage with digital technologies, the more likely they are to develop and enhance their digital competence. Moreover, the results indicate that individuals who have been using digital technologies for a longer period are more likely to possess higher levels of digital competence.

Table 9. Digital Technology Use in Class and Digital Competence Level

		Digital competence level									
		A2+B1 (Integrator+ Explorer)		B2 (Expert)		C1 (Leader)		C2 (Pioneer)		X^2	p
		n	%	n	%	n	%	n	%		
Percentage of used digital technologies in class	0 - 50 %	10	34.5	13	36.1	4	20.0	2	15.4	6.796	0.340
	51 - 75 %	8	27.6	9	25.0	8	40.0	8	61.5		
	76 - 100 %	11	37.9	14	38.9	8	40.0	3	23.1		
Current use of digital technologies	0 - 3 years	8	27.6	8	21.6	4	19.0	2	15.4	11.959	0.440
	4 - 5 years	6	20.7	6	16.2	9	42.9	2	15.4		
	6 - 9 years	7	24.1	7	18.9	5	23.8	6	46.2		
	10 - 14 years	3	10.3	9	24.3	1	4.8	1	7.7		
	15 and above	5	17.2	7	18.9	2	9.5	2	15.4		

In addition, an analysis of variance (ANOVA) was conducted to compare the mean scores across various components of teaching competence for different groups of participants based on their years of teaching experience. The F-values and associated p-values from the ANOVA were inspected to identify any statistically significant differences between the groups. From this analysis, we found no statistically significant differences between the groups of participants with varying years of teaching experience across most of the teaching competence components. This suggests that years of teaching experience did not significantly affect participants' scores in most of the examined components: Professional Engagement, Digital Resources, Teaching and Learning, Assessment, Empowering Learners, Facilitating Learners' Digital Competence.

However, there was one notable exception: "Digital Content Creation". For this component, participants with 1-5 years of teaching experience had a mean score of 62.61 (SD=15.14), those with 6-9 years of experience had a mean score of 70.00 (SD=20.43), those with 10-14 years of experience had a mean score of 77.00 (SD=13.42), those with 15-19 years had a mean score of 78.57 (SD=14.60), and those with 20 or more years of experience had a mean score of 70.00 (SD=21.96) (F(2,95)

= 2.576, p = 0.042). This indicates a statistically significant difference in the scores for Digital Content Creation between the different groups of teaching experience. These findings suggest that the number of years of teaching experience has an impact on the scores for Digital Content Creation. Specifically, teachers with 15-19 years of experience had the highest mean score, followed by those with 10-14 years , and finally those with 20 or more years of experience. The observed difference in scores between these groups is unlikely to have occurred by chance alone. In relation to the use of digital technologies in classrooms, an ANOVA test was performed to compare the mean scores of various aspects of digital competence between three groups of participants who utilized digital technologies in their classrooms at varying levels: 0-50%, 51-75%, and 76-100%. The F-values associated with the ANOVA tests were examined to determine if there were statistically significant differences between the three groups. Statistically significant differences were found in two areas of digital competence among the three groups: Empowering Learners and Actively Engaging Learners.

We found a statistically significant difference in scores between the groups as determined by one-way ANOVA [$F(2,95)=3.789$, $p=0.026$] regarding Empowering Learners. Post-hoc comparisons using Tukey HSD indicated that the mean score for the 51-75% group (M=70.30, SD=14.92) was significantly different from the 0-50% group (M=59.77, SD=13.97). However, the 76-100% group (M=67.78, SD=17.35) did not significantly differ from the other two groups. These findings suggested that the level of empowerment among learners has a significant impact on their scores. The results indicate that learners who are empowered tend to perform better academically compared to those who are not.

As for Actively Engaging Learners, there was a significant effect of technology utilization on the ability to actively engage learners at the $p<.05$ level for the three conditions [$F(2,95) = 4.239$, $p = 0.017$]. Post hoc comparisons using Tukey HSD test indicated that the mean score for the 51-75% (M=77.58, SD=16.40) and the 76-100% (M=76.11, SD=18.40) groups were significantly different and higher than the 0-50% group (M=66.21, SD=14.25). These findings imply that increased utilization of technology correlates with a heightened capacity to actively involve learners. Educators should prioritize the integration of technology into their teaching methods to augment student engagement and improve learning outcomes.

In other aspects of digital competence (Professional Engagement, Digital Resources, Teaching and Learning, Assessment, Facilitating Learners' Digital Competence, Organisational Communication, Professional Collaboration, and Reflective Practice) no statistically significant differences were found among the three groups of digital technology utilization. These findings suggest that while there may be variations in overall digital competence between the different groups, it does not necessarily translate to differences in specific aspects of digital competence. This indicates that individuals across all levels of digital technology utilization possess similar skills and abilities in areas such as professional engagement, digital resources, teaching and learning, assessment, facilitating learners' digital competence, organisational communication, professional collaboration, and reflective practice.

4.5. Digital Tools EFL Instructors Use in Class

The last research question aimed to investigate the digital tools EFL instructors use in their classes. Table 10 displays the digital tool preferences of EFL instructors within their educational practices.

Table 10. Participants' Digital Tool Preferences Utilized in Classes.

Digital tools	n	%
Presentations	88	88.0
Watching videos / listening to audios	87	87.0
Creating videos / audios	50	50.0
Online learning environments	80	80.0
Digital quizzes or polls	78	78.0
Interactive apps or games	67	67.0
Digital posters, mind maps, planning tools	39	39.0
Blogs or wikis	19	19.0

The data provided valuable insights into the current utilization of various digital tools among participants. Notably, presentations and watching videos/listening to audios stand out as the most widely embraced tools, with 88% and 87% of participants, respectively, incorporating these elements into their educational practices. This high percentage suggests a strong reliance on multimedia content for instructional purposes,

indicating a recognition of the effectiveness of visual and auditory aids in enhancing the learning experience.

Creating videos/audios follows closely behind at 50%, showcasing a significant but slightly lower adoption rate. This suggests that a substantial portion of participants is actively engaged in content creation, reflecting a shift towards more interactive and participatory learning approaches.

Online learning environments also demonstrate a notable presence, with 80% of participants incorporating them. This reflects a widespread acceptance of digital platforms for delivering educational content and fostering online interactions.

Digital quizzes or polls (78%), interactive apps or games (67%), and digital posters, mind maps, and planning tools (39%) showcase a diverse array of tools used to enhance engagement and interactivity. These percentages indicate a considerable interest in incorporating interactive and gamified elements into the learning process.

Blogs or wikis, while having a lower adoption rate at 19%, still represent a portion of participants actively leveraging collaborative and online publishing tools for educational purposes.

Overall, the data suggests a dynamic and diverse digital landscape in education, with educators incorporating a range of tools to enhance engagement, interactivity, and content creation in their teaching practices.

5. DISCUSSION AND CONCLUSION

This chapter offers a thorough synthesis and critical discussion of the findings from the study, highlighting the central insights and their implications within the broader context of English as a Foreign Language (EFL) education. It emphasizes the critical importance of digital competences for educators in the contemporary, technology- infused educational landscape. By examining the contributions and limitations of this research, the discussion sets the stage for future investigations, aiming to enrich the understanding of digital readiness among EFL educators and to foster further scholarly engagement with this crucial topic.

One of the salient outcomes of the statistical analysis is the discovery of a lack of significant correlation between EFL instructors' digital competence and demographic variables such as gender or age. This finding suggests a widespread and equitable distribution of digital skills among EFL educators, cutting across different demographic lines. The implication here is profound: demographic characteristics do not predetermine an educator's ability to effectively utilize digital technologies in their teaching practice (Acilar & Sæbø, 2023). This challenges any preconceived notions that certain demographic groups might be predisposed to higher or lower levels of digital competence (Arztmann et al., 2023) and underscores the universal potential for digital proficiency among EFL educators.

The revelation of this uniform distribution not only speaks to the accessibility and pervasiveness of digital technologies but also highlights the necessity for ongoing professional development that is inclusive and supportive of all educators, regardless of their demographic background. Kassymova et al. (2023) and Su et al. (2023) emphasized that digital competence is an essential skill set for all EFL educators, as it plays a vital role in enhancing teaching and learning in the digital era. This finding encourages educational institutions and policymakers to persist in allocating resources to digital literacy programs that are tailored to meet the diverse needs of educators, fostering an environment where every instructor has the opportunity to cultivate and enhance their digital skills.

Furthermore, this discussion acknowledges the role of digital competences in leveling the playing field for educators, providing them with the tools and knowledge necessary to create engaging, effective, and innovative learning experiences for their students (Lehmkuhl & Frisch, 2023). By highlighting the non-discriminatory nature of digital skill distribution among EFL educators, this study contributes to the ongoing discourse on equitable access to professional development opportunities in the digital domain.

5.1. EFL Instructors' Engagement with Digital Resources

The first research question sought to identify the EFL instructors' self-reported digital competence level, and the digital competence level assessed through DigCompEdu. The self-assessment aimed to establish a baseline for their digital engagement in five digital competence levels. Participants' initial responses were then compared to their performance on subsequent sections that detailed their competences across six main areas and 22 specific skills as according to DigCompEdu (2023) standards. This process not only underscores the disparity between perceived and actual digital competences but also highlights the potential for self-awareness and growth among educators in their digital engagement. The comparison seeks to illuminate the pathways for professional development, emphasizing the need for continued education and training to bridge any gaps identified between self-assessment and the framework's competences.

In the current study, we found that while most respondents provided accurate assessments of their digital competence levels, there may have been some excessive confidence in their capabilities at both the lowest and highest levels. Participants may have self-identified as Pioneers even though their current level of knowledge was quite advanced, on account of a potential lack of adequate understanding regarding extensive digital competence. Additionally, the participants may have overlooked recent developments due to the rapid pace of technological progress.

It also highlights the importance of objective assessments to accurately gauge individuals' digital skills and knowledge. Relying solely on self-reported digital competence levels may lead to ineffective allocation of resources in educational institutions. These outcomes, which present two distinct findings, are consistent with previous research findings (e.g., Canbulat, 2022; Karacan, 2023). For instance,

Canbulat (2022) explored the impact of a technology-enhanced language-teaching course on pre-service EFL instructors by comparing changes in participants' self-assessed digital competence before and after the course. The study found that after the training, participants reported an improvement in their perceived digital competence and stated a desire to implement this increased competence in their future teaching practices.

5.2. Self-Reported vs. Actual Digital Competence

In exploring EFL instructors' engagement with digital resources, a significant difference was observed between self-reported and framework-assessed digital competence levels. A considerable portion of the respondents, 37%, positioned themselves at the Expert (B2) level in their initial self-assessment, which closely aligns with the framework's assessment, indicating an actual level of 42%. This alignment suggests a high level of self-awareness among a large group of instructors regarding their digital competences (Noou & Retali, 2023). The Integrator (B1) and Leader (C1) levels also reflected a close match between self-perception and the DigCompEdu framework's evaluation, with 22% of participants identifying as Integrators in both self-reported and actual assessments, and a slight variance observed between the self-reported (21%) and actual (25%) assessments of Leaders. This minor gap may indicate a modest underestimation of capabilities or an opportunity for further development among those at the Leader level. Conversely, a disparity was noted at the Explorer (A2) and Pioneer (C2) levels.

Seven percent of participants self-identified as being at the Explorer level, but the framework assessment placed only three percent in this category, indicating that this group might have overestimated their digital competences. This discrepancy underscores the importance of providing structured support and specialized training to instructors. Such interventions are crucial for those who have not yet consistently incorporated digital technologies into their teaching practices, echoing the findings of previous research by Fernández Cruz et al. (2018), Fuentes et al. (2019), and Valverde-Berrocoso et al. (2021), which also highlighted the need for enhanced digital literacy and competence development among educators. The need for enhanced training is further underscored by the absence of any instructor self-identifying or being assessed at the Newcomer (A1) level, suggesting a baseline digital competence across the

participant pool. Further scrutiny reveals that the lowest reported and assessed group of instructors falls within the Explorer (A2) category. Despite a modest portion of instructors identifying themselves in this category (7% self-reported), the framework's assessment places a smaller percentage (3%) in this group. This discrepancy may reflect a variation in self-perception versus objective assessment of digital skills, underscoring the complexity of accurately gauging one's digital competences without a structured framework. According to Redecker (2017), Explorers are characterized by their engagement with digital technologies, albeit without a comprehensive or consistent strategy. This level of engagement suggests that while these instructors have taken steps towards integrating digital tools into their teaching, there is room for growth in terms of consistency and depth of use. The observed gap between self-assessment and the DigCompEdu framework's evaluation for the Explorer group emphasizes the need for targeted support and professional development. It indicates that instructors at this level may benefit from increased exposure to and training in digital technologies to enhance their understanding and effective use of these tools in educational contexts. This need for training is further highlighted by the gap in perceived versus assessed competences, suggesting that educators may not fully recognize their developmental areas without external feedback and assessment (Pitt & Winstone, 2023).

The Pioneer level, intended as the highest echelon of digital competence, exhibited a similar trend of self-overestimation, with 13% of respondents considering themselves at this level, in contrast to an 8% assessment by the framework. This discrepancy points to a potential gap in understanding the depth and breadth of competences required to be considered a Pioneer in digital education, emphasizing the importance of continuous professional development and reflection for educators aspiring to this level of digital proficiency. This finding is significant for several reasons. Firstly, it points to the essential role of self-awareness and accurate self-assessment in professional growth and competence development (Noou & Retali, 2023). Secondly, it underscores the value of frameworks like DigCompEdu in providing a structured, objective measure of digital competences that can guide educators in identifying their strengths and areas for improvement (Caena & Redecker, 2019; Cabero-Almenara et al., 2020; Rahimi & Mosalli, 2024). Lastly, the data advocate for the importance of institutional support in the form of training and

professional development opportunities tailored to educators' specific needs. Such initiatives could help bridge the gap between current competences and the desired proficiency levels, ultimately enhancing the quality of digital education provided to students (Abdigapbarova & Zhiyenbayeva, 2023; Wu et al., 2023).

The discussion around the Integrator level, as identified in both self-reported assessments and the DigCompEdu framework, reveals a noteworthy alignment, with twenty-two per cent of participants accurately recognizing their digital competences. This congruence between self-perception and objective assessment underscores a significant level of digital literacy and engagement among these educators. According to Redecker (2017), while the Integrator group demonstrates considerable involvement with digital technologies, there is an imperative need for them to enhance their skills in integrating these technologies with pedagogical strategies and methods effectively. The exact match in the self-reported and assessed levels of digital competence for the Integrator group suggests that these educators possess a realistic understanding of their digital capabilities. However, the observation by Redecker (2017) points towards a critical area for further development. Although these instructors are adept at employing digital tools in their teaching, the full potential of these technologies has yet to be realized without a deliberate and strategic synthesis of digital tools within pedagogical frameworks. This scenario indicates a pivotal opportunity for targeted professional development. Specifically, training for Integrators should not merely focus on introducing new digital tools but should emphasize the pedagogical integration of these technologies (Agudelo et al., 2023; Economou et al., 2023; Maghfiroh et al., 2023). This training ought to focus on improving educators' skills in integrating digital tools effectively with teaching methodologies, consequently enriching the educational setting and elevating student performance. This approach is in harmony with the concepts presented by Moreira et al. (2023), Ogegbo (2023), and Reyes and Gurubel-Tec (2024), who advocate for the strategic use of technology to enhance teaching and learning outcomes. ElSayary (2023) emphasized the significance of ongoing professional development programs that are specifically designed to address the unique requirements of educators across various digital competence levels. This underscores the necessity for targeted training initiatives that cater to enhancing digital skills tailored to each educator's proficiency stage. For Integrators, the emphasis should be on developing a sophisticated understanding of how digital technologies can

enhance pedagogical practices, moving beyond basic usage to innovative and effective integration. This approach not only supports the professional growth of educators but also contributes to the advancement of digital pedagogy, ultimately benefiting the broader educational landscape.

The analysis of the Expert group's digital competences showed a slight difference between the self-reported (37%) and DigCompEdu framework-assessed levels (42%). This minimal variance implies that participants possess a strong self-awareness and skill in their digital competences. This observation aligns with findings from previous research. Specifically, in the study by Noou and Retali (2023), it was observed that, according to their self-assessments, most participants exhibited a digital competence level ranging from medium to low. In concordance with this and previous research findings, Redecker (2017) characterizes this group as the foundational strength among participants, emphasizing their proficiency in choosing suitable digital technologies for diverse educational settings and their continuous endeavor to grasp the complexities of these tools, encompassing both their benefits and drawbacks.

Leaders not only exhibit high competence in digital technologies but also demonstrate innovative teaching practices, inspire their peers, and contribute to the educational community's broader digital learning culture. Therefore, for Experts aiming to progress to the Leader level, a dual focus is recommended: one that continues to broaden their technological toolkit and another that deepens their pedagogical strategies through reflective practice and continuous learning. This approach will enable them to harness the full potential of digital technologies in education, thereby enhancing learning outcomes and leading the way in the adoption of innovative educational practices (Bentri et al., 2022). In the analysis of digital competence levels among EFL instructors, the Leader level presents an intriguing scenario with a relatively small discrepancy between self-reported competence (21%) and the assessment according to the DigCompEdu framework (25%). This minor variance indicates a strong presence of instructors who not only proficiently use digital technologies but also serve as motivational figures within their educational communities. Redecker (2017) casts Leaders as pivotal in fostering a culture of digital innovation and learning among their peers, underscoring their role in not just applying but also advancing digital pedagogy. The comparison reveals that a significant portion

of instructors possess the competences and qualities of Leaders, highlighting their ability to integrate digital tools effectively and inspire others through their practices. This observation suggests that initiatives aimed at further enhancing these instructors' skills could benefit not just the individuals but also their broader educational environments by cultivating a more dynamic and innovative approach to digital integration in teaching.

Turning to the Pioneer group, a discrepancy is observed between the self-reported (13%) and actual (8%) levels of competence, suggesting an overestimation of their engagement and proficiency with digital technologies. This gap may be attributed to a lack of full understanding among some instructors of the comprehensive and advanced nature of the Pioneer designation as described by Redecker (2017). Pioneers are identified as educators who not only utilize digital tools in their teaching but are also engaged in a continual process of evaluation and innovation, seeking to push the boundaries of digital pedagogy and instructional design (Moreira et al., 2023; Ogegbo, 2023; Reyes & Gurubel-Tec, 2024). The presence of Pioneers, albeit in a smaller percentage, is notable for several reasons. Firstly, it signifies a group of educators who are at the forefront of exploring and implementing cutting-edge digital technologies and pedagogical strategies (García-Delgado et al., 2023; Grosseck et al., 2023). Secondly, the gap between self-perception and actual competence levels for this group highlights the need for more nuanced support and development opportunities. These should be designed to help potential Pioneers accurately assess their skills and to provide them with the resources necessary to fully realize their innovative potential.

In examining the landscape of digital competence research within the Turkish context, a distinct divergence emerges between the methodology of the current study and those conducted by Canbulat (2022), Ertaş, (2022), Karacan (2023), and Şenel (2023). Canbulat's (2022) study concentrated on pre-service EFL teachers, while Karacan (2023) extended the scope to include both pre-service and in-service EFL teachers, employing a methodology that involved providing training to participants and assessing the impact of this intervention on digital competence. Unlike previous studies, the current study did not incorporate a training component. Instead, it focused on the digital competences of actively teaching EFL instructors using DigCompEdu framework. Despite this methodological difference, the findings and insights from

earlier studies offer valuable perspectives that enrich the understanding of digital competence development among EFL educators. The study by Karacan (2023), in particular, provided compelling evidence of the positive impact of targeted training on the digital competences of in-service English language teachers. The study highlighted a clear recognition among participants of the necessity to advance their digital skills, coupled with a significant motivation to achieve this goal. The results indicated a comprehensive enhancement of competences, including the use of digital platforms, materials, and tools, as well as a deeper understanding and application of various digital competence components. Furthermore, Karacan (2023) reported an increase in participants' confidence in applying digital resources, underscoring the effectiveness of training in fostering self-assurance and proficiency in digital practices. The contrast in findings between these studies and the present research underscores the potential benefits of incorporating training into the development of digital competences among EFL instructors. While the current study sheds light on the self-perceived and assessed digital competences of EFL educators without the influence of formal training, the insights from Canbulat (2022) and Karacan (2023) suggest that training sessions can significantly enhance these competences, motivating educators to engage more deeply with digital tools and resources. This suggests a promising avenue for future research and practice: the integration of structured training programs aimed at elevating the digital proficiency of EFL teachers, thereby better equipping them to meet the demands of the modern educational environment. Such initiatives could serve to not only improve the digital competence of educators but also enhance the overall quality of language instruction, leveraging technology to create more engaging, effective, and innovative learning experiences for students.

Overall, the analysis underscores a significant difference between self-reported and actual digital competence levels, suggesting a wide gap between perceived and measured digital literacy for higher competence categories. This finding is crucial for understanding the limitations of self-assessment in accurately gauging digital competence and reinforces the importance of objective evaluations like those provided by the DigCompEdu framework. The difference between self-reported and actual digital competence not only highlights the challenge of self-assessment accuracy but also suggests implications for the allocation of professional development resources. Educational institutions relying solely on self-reported data might misallocate

resources (Fossati et al., 2021), overlooking the need for targeted support in developing digital competences.

5.3. EFL Instructors' Engagement with Digital Resources

The third research question explored if the utilization of digital resources by EFL instructors vary with respect to years of experience, gender, and age.

The investigation into how gender influences self-reported digital competence among EFL instructors demonstrated that gender does not significantly impact their utilization of digital resources in educational settings. The presence of diverse levels of digital competence among male and female instructors, coupled with a lack of statistical significance, suggests that gender does not play a crucial role in an educator's readiness or ability to integrate digital tools into their pedagogical practices. This finding is consistent with recent research, including studies by Méndez et al. (2023) and Rubio Gragera et al. (2023), which also reported no notable gender differences in educators' digital proficiency. Such uniformity in findings indicates a diminishing significance of gender as a factor in digital engagement and competence within education, pointing towards an evolving trend of gender neutrality. This shift highlights the imperative for professional development programs to be tailored to the distinct digital competences and instructional needs of EFL instructors, moving beyond broad, gender-based categorizations. By focusing on the individual skills and requirements of educators, institutions can more precisely support their faculty in the effective deployment of digital technologies within language teaching frameworks. Moreover, the emphasis on personalized professional development echoes the broader research narrative, as seen in works by Guillén-Gámez et al. (2021), which advocate for digital integration strategies that prioritize individual educator circumstances and needs over generic solutions. This study's insights contribute to the broader discourse on the intersection of gender and digital competence in EFL teaching, promoting a customized, competence-focused approach to educator development. Such strategies not only create a more inclusive and nurturing environment for teacher growth but also promise to elevate the standard of language education through strategic digital integration.

As for the second independent variable, age, there was no statistically significant difference between age groups and self-reported digital competence. Therefore, it

appears that age, in isolation, may not be a definitive factor in determining the extent of digital resource engagement among EFL instructors. This observation challenges the common presumption that younger instructors are inherently more adept at navigating digital landscapes, as the data suggests a relatively uniform distribution of digital competences (Zhang, 2023). The absence of a statistically significant age-related difference underscores the imperative to explore additional determinants that could more profoundly influence digital engagement among educators. Comparatively, these findings resonate with those from previous studies, such as the work of Nwankwor (2021), which also did not find age to be a strong predictor of digital competence among teachers. Similarly, research by Dias-Trindade et al. (2020) underscores the complexity of factors beyond age that contribute to digital proficiency, emphasizing the role of continuous learning and professional development.

Acknowledging that age may not consistently influence digital engagement fosters a more tailored approach to professional development for EFL instructors. This perspective encourages educational policymakers and administrators to consider diverse factors that contribute to digital competence, advocating for professional development programs that address the specific needs of educators, transcending age-based assumptions. By embracing a comprehensive understanding of what influences digital engagement, there is a significant opportunity to enhance the effective integration of digital resources in language education, ensuring that professional development initiatives are inclusive and responsive to the nuanced needs of all educators.

The examination of how years of teaching experience influence EFL instructors' engagement with digital resources presented nuanced outcomes. Notably, instructors with 6–9 years of experience were predominantly represented at the C2 (Pioneer) level, hinting at an affinity for higher digital innovation among educators within this middle range of experience. Conversely, the spectrum of digital competence among teachers with 1 to 5 years of experience shows a more uniform distribution, suggesting that newer instructors are exploring digital competences at varying levels. Despite these observations, the statistical analysis revealed no significant difference between the duration of teaching experience and self-reported digital competence. This finding challenges the notion that more years of teaching necessarily equate to greater digital engagement or competence (Nwankwor, 2021). Instead, the data suggested that the

relationship between teaching experience and digital utilization is complex and not directly proportional. The absence of statistically significant differences underscores the importance of considering a wider array of influences on an instructor's digital engagement beyond years of experience.

This result is consistent with prior research that has similarly raised doubts regarding the direct influence of teaching experience on digital competence. For example, research by Nwankwor (2021) found similar patterns, where teaching experience did not straightforwardly predict digital engagement levels among educators. Such comparisons underline the complexity of factors contributing to digital competence and the necessity of a broader approach in understanding and supporting educators' digital development. The insights gained from this investigation highlight the imperative for professional development programs to be adaptive and responsive to the needs of EFL instructors across all levels of experience. Recognizing that teaching experience alone does not define an instructor's digital competence paves the way for more inclusive and comprehensive training strategies. These strategies should aim to enhance digital skills and encourage innovative teaching practices among EFL teachers, fostering a more digitally competent and engaged teaching community.

5.4. EFL Instructors' Digital Competence Levels as Measured by DigCompEdu

We used the DigCompEdu framework, a comprehensive tool for assessing educators' digital skills (Economou et al., 2023; Redecker & Caena, 2019), to evaluate our participants' digital competences. Through the utilization of this approach, we successfully carried out a thorough examination of digital proficiency across different demographic groups within our research sample. The analysis sought to uncover patterns and insights that can guide targeted professional development strategies, ensuring they are customized to address the specific needs of educators based on their individual profiles. The findings are also crucial for shaping future educational policies and professional development programs, with the goal of enhancing digital competence across the educational sector. By leveraging the insights gained from the DigCompEdu framework, educational institutions can more effectively support their faculty in adopting and integrating digital technologies into their teaching practices, ultimately enriching the learning experience for students.

The analysis uncovered distinct patterns in how male and female instructors engage with digital resources. Specifically, a significant proportion of male instructors were categorized at the B2 (Expert) level, with a notable presence at the C1 (Leader) level. Conversely, the least represented category among males was the combined Integrator+Explorer levels. Female participants, on the other hand, showed a broader spread across the competence spectrum, with a pronounced majority at the C2 (Pioneer) level, and the smallest percentage found within the Integrator+Explorer levels. These findings highlighted notable gender-based differences in the distribution of digital competence levels among EFL instructors, with male instructors showing a tendency towards the higher end of the competence scale and female instructors demonstrating a wider, more balanced distribution across the levels. This variation indicated that gender could influence the development and display of digital competence among EFL instructors, echoing findings from previous research that utilized the DigCompEdu framework, such as the study conducted by Palacios-Rodríguez et al. (2023). These gender-specific patterns in digital competence have substantial importance for the design and implementation of professional development programs. Recognizing these differences can lead to the creation of more nuanced and effective strategies aimed at enhancing digital competence across gender lines. Tailoring professional development initiatives to address the unique needs and strengths of both male and female instructors can help in fostering a more inclusive and equitable digital learning environment. Such targeted approaches are essential for supporting instructors in their digital growth journey, ensuring they are well-equipped to integrate digital technologies into their teaching practices effectively.

The DigCompEdu framework serves as the basis for exploring age as a critical factor influencing EFL instructors' digital resource utilization. Among instructors under 30, a notable equilibrium was found in digital competence levels, with the largest proportions being classified as B2 (Expert) and within the Integrator+Explorer categories. In contrast, the 30-39 age group exhibited a significant concentration at the C1 (Leader) level, indicating a tendency towards higher digital leadership. Conversely, instructors aged 50 and above represented the smallest group, highlighting a decrease in digital engagement or proficiency within this demographic. These patterns indicated age-related disparities in digital competence among Turkish EFL instructors. While the younger cohort shows a versatile engagement across competence levels, those in

the 30-39 age range are more likely to achieve leadership status in digital competence. The diminished presence of the over-50 age group raises questions about the barriers or differing approaches to digital technology that affect older instructors. Significant gender differences in organizational communication and guidance in favour of female participants echoes findings from the study by Palacios-Rodríguez et al. (2023). In their study which used the DigCompEdu model, Palacios-Rodríguez et al. (2023) identified age as a significant determinant of educators' digital competence. Their research found that younger educators tend to be more adept at integrating new technologies into their teaching, reflecting a generational shift in digital literacy. Acknowledging these age-related trends is crucial for the development of age-sensitive professional development programs. By understanding the unique challenges and strengths of each age group, educational institutions can craft targeted strategies to bolster digital competence across the board. Such initiatives are essential for ensuring that all instructors, regardless of age, are equipped with the necessary skills to effectively incorporate digital tools into their teaching methodologies. This approach not only supports individual professional growth but also enhances the overall quality of education in the digital era.

Regarding the years of experience, our research revealed distinct variations across various groups. Instructors with 1–5 years of teaching experience displayed a balanced distribution across digital competence levels, yet notably, none reached the C2 (Pioneer) level. In contrast, the 6–9 years of experience group showed a strong aptitude towards the C1 (Leader) level, indicating a peak in digital leadership skills during these years. A significant percentage of teachers with 10-14 years of experience were identified as B2 (Expert), but instructors with 20 or more years of experience were underrepresented at the C2 (Pioneer) level. Based on the results, it appears that there is a complex correlation between tenure as a teacher and digital competence. Specifically, different levels of experience are associated with distinct degrees of digital proficiency. The absence of Pioneers among the most and least experienced educators hints at potential barriers to reaching the highest level of digital competence, possibly due to evolving professional development needs over an instructor's career.

This complexity in the relationship between teaching experience and digital competence is mirrored in literature. Studies by Cabero-Almanara et al. (2021) and Guillén-Gámez and Mayorga-Fernández (2019) similarly identified teaching

experience as a multifaceted factor influencing educators' digital engagement and skill levels. Their research indicated a trend where mid-career educators exhibit higher levels of digital innovation, a pattern that aligns with the findings of this analysis. Their research indicated a trend where mid-career educators exhibit higher levels of digital innovation, a pattern that aligns with the findings of this analysis. Indeed, in the present study, educators with 10–19 years of experience showed significantly higher proficiency in digital content creation. This finding suggests that experience contributes to proficiency, lending support to Benali et al.'s (2018) argument about the positive impact of practical teaching experience on specific digital skills.

The implications of these trends are significant for designing professional development initiatives. Recognizing the distinct needs and digital engagement profiles of instructors at different career stages can guide the creation of targeted training programs. Such programs should aim to elevate digital competence uniformly, addressing the unique challenges and leveraging the strengths present at each career phase.

Analysis of digital technology usage in classrooms showed significant impacts on "Empowering Learners" and "Actively Engaging Learners" categories, with intermediate and high levels of technology usage correlating with higher scores in these areas. This underscores the importance of strategic technology integration in enhancing student engagement and empowerment, resonating with findings from Antonietti et al. (2022) and Gümüş and Kukul (2023) that effective technology use in education can significantly improve teaching outcomes. These analyses collectively emphasize the multifaceted nature of digital competence among EFL instructors, highlighting the need for nuanced professional development strategies that consider individual differences in gender, age, experience, and technology usage. They also reinforce the value of objective frameworks like DigCompEdu in guiding educational policy and professional development to enhance digital literacy across the educational landscape.

5.5. Digital Tools EFL Instructors Use in Class

Majority of participants reported incorporating presentations along with audio and video content into their teaching practices. This widespread use underscores the effectiveness of visual and auditory aids in enriching the educational experience, a trend that aligns with contemporary educational theories advocating for multimodal learning environments (e.g., Albus & Seufert, 2023; Pellerin & Vergote, 2023). Content creation, particularly in the form of audio and video, emerges as a dominant activity among half of the respondents. This preference for generating original multimedia content reflects a shift towards more interactive and engaging teaching methodologies, resonating with the growing emphasis on student-centered learning approaches (Shadiev & Li, 2023). The deployment of various digital tools, such as polls, quizzes, interactive applications, digital posters, and planning tools, illustrates the diverse strategies adopted to enhance student engagement and participation. The incorporation of gamification elements and interactive resources points towards a broader pedagogical goal of making learning more dynamic and appealing to students (Taşkın & Çakmak, 2023; Widodo et al., 2023; Wulantari et al., 2023). Despite lower usage rates, the utilization of blogs and wikis signals an openness among some educators towards employing collaborative and publishing tools in educational settings. The wide variety of tools that teachers use is a reflection of the dynamic and ever-evolving digital environment in education, which is characterized by a dedication to improving learning experiences through the smooth integration of technology. (Bharathi et al., 2023; Yaş, 2023).

Our findings are consistent with recent studies conducted by Ateş et al. (2023) and Ateş and Yilmaz (2023), which show an increasing trend in digital tool adoption among educators across disciplines and confirm the growing importance of digital literacy and competence in the teaching profession.

These observations underscore the necessity for ongoing professional development in digital literacy to keep educators abreast of technological advancements and pedagogical strategies that leverage these tools effectively (De León et al., 2023). As EFL instructors continue to embrace a broad spectrum of digital resources, the focus on tailored training programs to enhance their digital skills

becomes paramount (Taghizadeh & Ejtehadi, 2023). This approach will ensure that educators are not only competent in using current technologies but are also prepared to integrate future innovations into their teaching practices, thereby enriching the learning experience for their students (Grassini, 2023).

5.6. Limitations and Suggestions for Future Research

The study presented insightful observations on the digital competences and utilization of digital tools among English as a Foreign Language (EFL) instructors, yet it was not without its limitations. One significant constraint was the diversity of the sample, which, although varied but small in size, may not fully capture the global EFL teaching community's wide spectrum of experiences and backgrounds. The reliance on self- reported data for gauging digital competence and tool usage also introduces a level of subjectivity, as participants might over- or underestimate their proficiency and engagement with digital technologies. Additionally, the dynamic nature of digital tools, which are constantly evolving, means that the findings may quickly become outdated as new technologies emerge and replace the ones currently in use. Moreover, the study's focus did not extend to the effectiveness of these digital tools in enhancing student learning outcomes, leaving an important area unexplored.

Given these limitations, there are several directions for future research that could enrich our understanding of digital competences in the EFL teaching context. Expanding the participant base to include a broader geographic and demographic scope could offer a more comprehensive view of digital tool use and competence levels across different educational environments and access to technology. Implementing objective measures of digital competence, such as performance assessments or digital portfolio evaluations, could complement self-reported data and provide a clearer picture of instructors' actual abilities. Longitudinal studies would allow for tracking changes in digital competences over time, offering insights into how instructors adapt to the rapid technological advancements in educational tools. Additionally, investigating the pedagogical effectiveness of specific digital resources could identify best practices for their integration into EFL teaching, focusing on their impact on student engagement and achievement. Lastly, examining the outcomes of targeted professional development programs on enhancing digital competences among EFL instructors could inform the design of more effective training initiatives, ensuring

educators are well-equipped to navigate the digital landscape of education. By addressing these areas, future research can build on the current study's foundations, offering deeper insights into the integration of digital technologies in EFL teaching and learning, and contributing to the development of more effective, evidence-based practices in digital education.

5.7. Conclusion

In conclusion, this study has shed light on the digital competences and utilization of digital tools among English as a Foreign Language (EFL) instructors, revealing a landscape rich with diversity in tool adoption and varying levels of digital competence. The findings indicate a significant reliance on multimedia resources such as presentations, audio, and video content, underscoring the value of visual and auditory aids in the teaching process. Moreover, the high rate of content creation among participants points to a shift towards interactive and participatory learning strategies, aligning with contemporary educational demands for engaging and dynamic course material.

The analysis also highlighted the widespread acceptance of online learning environments, reflecting a broader trend towards digital platforms for content delivery and student interaction. Despite this, the study revealed no significant correlation between instructors' demographic factors—such as age, gender, and years of teaching experience—and their digital competence levels, suggesting that other variables might influence digital engagement more profoundly. The comparison between self-reported and actual digital competence, as assessed by the DigCompEdu framework, unveiled a tendency among some instructors to overestimate their digital skills, particularly at higher competence levels. This discrepancy emphasizes the importance of objective assessments in accurately gauging digital literacy and the need for educational institutions to rely on more than self-reported data when allocating resources for professional development. Looking ahead, the study underscores the necessity for ongoing, tailored professional development programs that address the specific digital competences and instructional needs of EFL instructors. By fostering a more nuanced understanding of digital tool utilization and competence across the educational sector, educators can be better supported in integrating technology effectively into their pedagogical practices. This, in turn, promises to enrich the learning experience for

students, ensuring that they receive a modern and engaging education that prepares them for the digital world.

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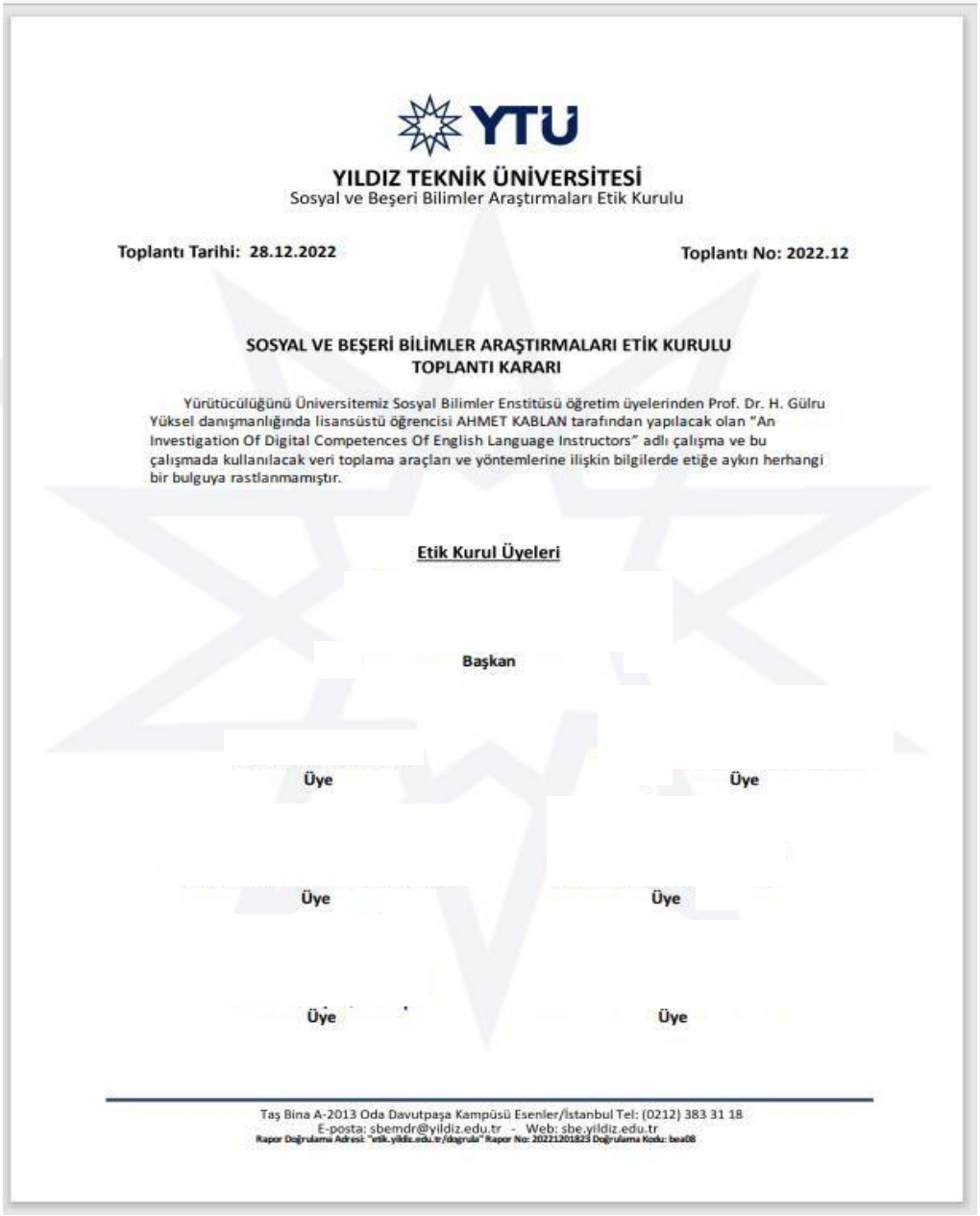
APPENDICES

Appendix 1. Ethical Committee Approval



YILDIZ TEKNİK ÜNİVERSİTESİ
Sosyal ve Beşeri Bilimler Araştırmaları Etik Kurulu

Toplantı Tarihi: 28.12.2022 **Toplantı No: 2022.12**

SOSYAL VE BEŞERİ BİLİMLER ARAŞTIRMALARI ETİK KURULU TOPLANTI KARARI

Yürütücülüğünü Üniversitemiz Sosyal Bilimler Enstitüsü öğretim üyelerinden Prof. Dr. H. Gülru Yüksel danışmanlığında lisansüstü öğrencisi AHMET KABLAN tarafından yapılacak olan "An Investigation Of Digital Competences Of English Language Instructors" adlı çalışma ve bu çalışmada kullanılacak veri toplama araçları ve yöntemlerine ilişkin bilgilerde etiğe aykırı herhangi bir bulguya rastlanmamıştır.

Etik Kurul Üyeleri

Başkan

Üye **Üye**

Üye **Üye**

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Appendix 2. DigCompEdu, the European Framework for Digital Competence of Educators Questionnaire

Name: Participants are required to write "Anonymous" as their names are not required.		
Current Digital Competence level		
How do you currently assess your digital competence as a teacher? Assign a level of competence from A1 to C2, where A1 is the lowest and C2 the highest level.		
A1: Newcomer A2: Explorer	B1: Integrator B2 (Expert)	C1 (Leader) C2 (Pioneer)
Area 1: Professional Engagement Teachers' digital competence is expressed in their ability to use digital technologies not only to enhance teaching, but also for their professional interactions with colleagues, students, parents and other interested parties. This is the focus of Area 1. Please choose the option that best reflects your current practice.		
Digital channels		
I systematically use different digital channels to enhance communication with students, parents and colleagues, e.g. emails, blogs, the school's website, Apps		
1. I rarely use digital communication channels 2. I use basic digital communication channels, e.g. e-mail 3. I combine different communication channels, e.g. e-mail and class blog or school website 4. I systematically select, adjust and combine different digital solutions to communicate effectively 5. I reflect on, discuss and proactively develop my communication strategies		
Collaboration with colleagues		
I use digital technologies to work together with colleagues inside and outside my educational organisation		
1. I rarely have the opportunity to collaborate with other teachers 2. Sometimes I exchange materials with colleagues, e.g. via e-mail 3. Among colleagues, we work together in collaborative environments or use shared drives 4. I exchange ideas and materials, also with teachers outside my organisation, e.g. in an online teacher network. 5. I jointly create materials with other teachers in an online network		

Development of digital teaching skills

I actively develop my digital teaching skills

1. I rarely have the time to work on my digital teaching skills
2. I improve my skills through reflection and experimentation
3. I use a range of resources to develop my digital teaching skills
4. I discuss with peers how to use digital technologies to innovate and improve educational practice
5. I help colleagues in developing their digital teaching strategies

Online training

I participate in online training opportunities, e.g. online courses, MOOCs, webinars...

1. This is a new area that I have not yet considered
2. Not yet, but I am definitely interested
3. I have participated in online training once or twice
4. I have tried out various different online training opportunities
5. I frequently participate in all kinds of online training

Area 2: Digital Resources

One of the key competences any teacher needs to develop is to identify good educational resources, and to modify, create and share digital resources that fit their learning objectives, student group and teaching style. At the same time they need to be aware of how to responsibly use and manage digital content, respecting copyright rules and protecting personal data.

These issues are at the heart of Area 2.

Please choose the option that best reflects your current practice.

Search Strategies

I use different internet sites and search strategies to find and select a range of different digital resources

1. I only rarely use the internet to find resources
2. I use search engines and educational platforms to find relevant resources
3. I evaluate and select resources on the basis of their suitability for my learner group
4. I compare resources using a range of relevant criteria, e.g. reliability, quality, fit, design, interactivity, appeal
5. I advise colleagues on suitable resources and search strategies

Modification of existing digital resources

I create my own digital resources and modify existing ones to adapt them to my needs

1. I do not create my own digital resources
2. I do create worksheets with a computer, but then I print them
3. I create digital presentations, but not much more
4. I create and modify different types of resources
5. I set up and adapt complex, interactive resources

Sensitive data

I effectively protect sensitive content, e.g. exams, students' grades, personal data

1. I do not need to do that, because the school takes care of this
2. I avoid storing personal data electronically
3. I protect some personal data
4. I password protect files with personal data
5. I comprehensively protect personal data, e.g. combining hard-to-guess passwords with encryption and frequent software updates

Area 3: Teaching and Learning

The most fundamental competence of the whole DigCompEdu framework is to design, plan and implement the use of digital technologies in the different stages of the teaching and learning process. However, when doing this, the aim must be to shift the focus of the lesson from teacher-led to student-centered processes. This is the real power of digital technologies and the focus of Area 3.

Please choose the option that best reflects your current practice.

Value creation

I carefully consider how, when and why to use digital technologies in class, to ensure that they are used with added value

1. I do not or only rarely use technology in class
2. I make basic use of available equipment, e.g. digital whiteboards or projectors
3. I use a variety of digital strategies in my teaching
4. I use digital tools to systematically enhance teaching
5. I use digital tools to implement innovative pedagogic strategies

Monitoring interactions

I monitor my students' activities and interactions in the collaborative online environments we use

1. I do not use digital environments with my students
2. I do not monitor student activity in the online environments we use
3. I occasionally check on them and their discussions
4. I regularly monitor and analyse my students
5. I regularly intervene with motivating or corrective comments

Digital technologies in group work

When my students work in groups or teams, they use digital technologies to acquire and document evidence

1. My students do not work in groups
2. It is not possible for me to integrate digital technologies into group work
3. I encourage students working in groups to search for information online or to present their results in digital format
4. I require students working in teams to use the internet to find information and present their results in a digital format
5. My students exchange evidence and jointly create knowledge in a collaborative online space

Documentation and planning

I use digital technologies to allow students to plan, document and monitor their learning themselves, e.g. quizzes for self-assessment, ePortfolios for documentation and showcasing, online diaries/blogs for reflection...

1. Not possible in my work environment
2. My students do reflect on their learning, but not with digital technologies
3. Sometimes I use, for example, quizzes for self-assessment
4. I use a variety of digital tools to allow learners to plan, document or reflect on their learning
5. I systematically integrate different digital tools to allow learners to plan, monitor and reflect on their progress

Area 4: Assessment

Digital technologies can enhance existing assessment strategies and give rise to new and better assessment methods. Additionally, by analysing the wealth of (digital) data available on individual student's (inter-)actions, teachers can offer more targeted feedback and support.

Area 4 addresses this shift in assessment strategies. Please choose the option that best reflects your current practice.

Tracking of student progress

I use digital assessment formats to monitor student progress

1. I do not monitor students' progress
2. I do monitor students
3. Sometimes I use a digital tool, e.g. a quiz, to check on students
4. I use a variety of digital tools to monitor student progress
5. I systematically use a variety of digital tools to monitor student progress

Analysing data

I analyse all data available to me to timely identify students who need additional support
"Data" includes students' engagement, performance, grades, attendance; activities and social interactions in (online) environments; "Students who need additional support" are: students who are at risk of dropping out or underperforming; students who have learning disorders or specific learning needs, students who lack transversal skills, e.g. social, verbal or study skills.

1. These data are not available and/or it is not my responsibility to analyse them
2. I only analyse academically relevant data, e.g. performance and grades
3. I also consider data on student activity and behaviour to identify students who need additional support
4. I regularly screen all available evidence to identify students who need additional support
5. I systematically analyse data and intervene in a timely manner

Feedback

I use digital technologies to provide effective feedback

1. Feedback is not necessary in my work environment
2. I do provide feedback to students, but not in digital format
3. Sometimes I use digital ways of providing feedback, e.g. automatic scores in online quizzes, comments or "likes" in online environments
4. I use a variety of digital ways of providing feedback
5. I systematically use digital approaches to provide feedback

Area 5: Empowering Learners

One of the key strengths of digital technologies in education is their potential for boosting the active involvement of students in the learning process and their ownership of it. Digital technologies can furthermore be used to offer learning activities adapted to each individual student's level of competence, their interests and learning needs. At the same time, however, care must be taken not to exacerbate existing inequalities (e.g. in access to digital technologies) and to ensure accessibility for all students, including those with special learning needs. Area 5 tackles these issues.
Please choose the option that best reflects your current practice.

Addressing digital problems

When I create digital assignments for students I consider and address potential digital problems, e.g. equal access to digital devices and resources; interoperability and conversion problems; lack of digital skills

1. I do not create digital assignments
2. My students do not have problems with using digital technology
3. I adapt the task so as to minimize difficulties
4. I discuss possible obstacles with students and outline solutions
5. I allow for variety, e.g. I adapt the task, discuss solutions and provide alternative ways for completing the task

Personalised learning opportunities

I use digital technologies to offer students personalised learning opportunities, e.g. I give different students different digital tasks to address individual

1. In my work environment, all students are required to do the same activities, irrespective of their level
2. I do provide students with recommendations for additional resources
3. I provide optional digital activities for those who are advanced or lagging behind
4. Whenever possible, I use digital technologies to offer differentiated learning opportunities
5. I systematically adapt my teaching to link to students

Active participation

I use digital technologies for students to actively participate in class

1. In my work environment it is not possible to actively involve students in class
2. I do involve students actively, but not with digital technologies
3. When instructing, I use motivating stimuli, e.g. videos, animations, cartoons
4. My students engage with digital media in my classes, e.g. electronic worksheets, games, quizzes
5. My students systematically use digital technologies to investigate, discuss and create knowledge

Area 6: Facilitating Learners' Digital Competence

The ability to facilitate students' digital competence is an integral part of teachers' digital competence is at the heart of Area 6.

Please choose the option that best reflects your current practice.

Assessment of reliable information

I teach students how to assess the reliability of information and to identify misinformation and bias

1. This is not possible in my subject or work environment
2. I occasionally remind them that not all online information is reliable
3. I teach them how to discern reliable and unreliable sources
4. I discuss with students how to verify the accuracy of information
5. We comprehensively discuss how information is generated and can be distorted

Communication and collaboration

I set up assignments which require students to use digital means to communicate and collaborate with each other or with an outside audience

1. This is not possible in my subject or work environment
2. Only on rare occasions are my students required to communicate or collaborate online
3. My students use digital communication and cooperation mainly among each other
4. My students use digital ways to communicate and to cooperate with each other and with an external audience
5. I systematically set assignments that allow students to slowly expand their skills

Creation of digital content

I set up assignments which require students to create digital content, e.g. videos, audios, photos, digital presentations, blogs, wikis...

1. This is not possible in my subject or work environment
2. This is difficult to implement with my students
3. Sometimes, as a fun activity
4. My students create digital content as integral part of their study
5. This is an integral part of their learning and I systematically increase the level of difficulty to further develop their skills

Safe and responsible behaviour

I teach students how to behave safely and responsibly online

1. This is not possible in my subject or work environment
2. I inform them that they have to be careful with relaying personal information online
3. I explain the basic rules for safely and responsibly acting in online environments
4. We discuss and agree on rules of conduct
5. I systematically develop my students' use of social rules in the different digital environments we use

Problem solving

I encourage students to use digital technologies creatively to solve concrete problems, e.g. to overcome obstacles or challenges emerging in the learning process

1. This is not possible with my students, in my work environment
2. I rarely have the opportunity to foster students
3. Occasionally, whenever an opportunity arises
4. We often experiment with technological solutions to problems
5. I systematically integrate opportunities for creative digital problem solving

Questions about you

To improve this questionnaire, we would like to ask you some questions about yourself.

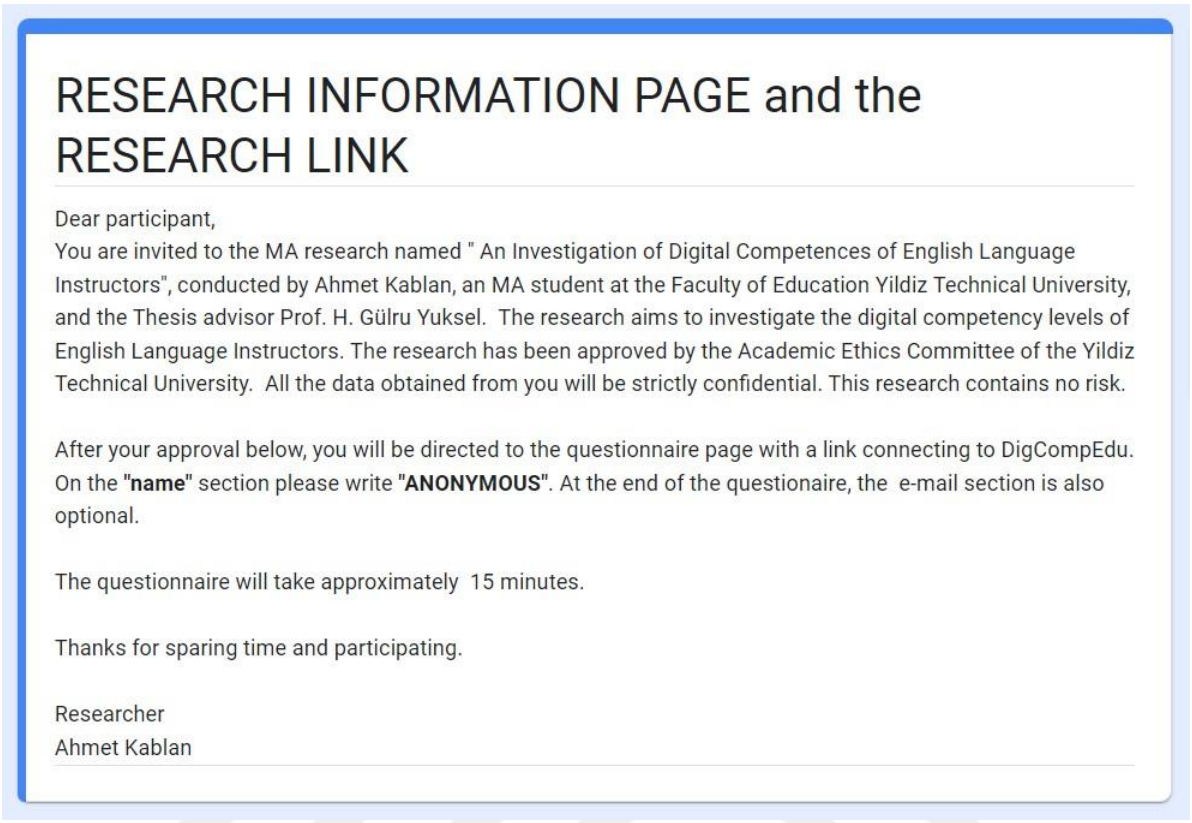
Please select your gender	**What is your age?**
1. Man 2. Woman 3. Prefer not to say	1. Under 25 2. 25 - 29 3. 30 - 39 4. 40 - 49 5. 50 - 59 6. Over 60 7. Prefer not to say
Including this school year, for how many years have you been teaching	**Which school type do you (mainly) teach at?**
1. 1 - 3 2. 4 - 5 3. 6 - 9 4. 10 - 14 5. 15 - 19 6. 20 or more 7. Prefer not to say	6. Primary 7. Lower Secondary 8. Upper Secondary 9. Vocational 10. Higher Education 11. Prefer not to say 12. Other
How long have you been using digital technologies in teaching?	**For what percentage of teaching time have you used digital technologies in class in the past 3 months?**

1. I have not yet used digital technologies in teaching 2. Less than 1 year 3. 1 - 3 years 4. 4 - 5 years 5. 6 - 9 years 6. 10 - 14 years 7. 15 - 19 years 8. 20 years or more 9. Prefer not to say	1. 0-10% 2. 25 % 3. 26 - 50 % 4. 4.75 5. 5.100 % 6. 6.Prefer not to say
Which of the following subjects do you teach? Multiple answers are possible	
1. Mother tongue 2. Foreign languages 3. Mathematics 4. Physics 5. Chemistry 6. Biology 7. Geography/Geology 8. Computer Sciences 9. History 10. Social Science 11. Political Science 12. Economics	13. Visual Arts / Design 14. Music 15. Drama 16. Physical Education 17. Religious Studies 18. Philosophy/ Ethics 19. I do not teach 20. Prefer not to say 21. Other
Which digital tools have you or your students already used for teaching and learning? Multiple answers are possible	**What is the age of the students you teach? Multiple answers are possible**
1. Presentations 2. Watching videos / listening to audios 3. Creating videos / audios 4. Online learning environments 5. Digital quizzes or polls 6. Interactive apps or games 7. Digital posters, mindmaps, planning tools 8. Blogs or wikis 9. I have not yet used any digital tools in class 10. Prefer not to say 11. Other	1. Under 6 2. 6 to 10 3. 10 o 12 4. 12 o 16 5. 16 o 19 6. 20 and older 7. Prefer not to say

Private use of digital technologies How would you describe yourself and your private use of digital technologies? In the following slides you will be asked to rate 5 different statements regarding your private use of digital technologies.				
Computers and other technical equipment				
I find it easy to work with computers and other technical equipment				
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
The internet				
I use the Internet extensively and competently				
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Openness and digital curiosity				
I am open and curious about new apps, programs, resources				
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Social networks				
I am a member of various social networks				
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Digital environment What about your work environment? In the following slides, you will be asked to rate 5 different statements about the extent to which your environment provides access to digital technologies.				
Interactive Whiteboards				
Interactive Whiteboards are available in each classroom				
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Students' access to digital devices				
Students have access to digital devices (laptops, tablets, smartphones) in the classroom				
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
The school´s internet				
The school's internet connection is reliable and fast				
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

The Internet at home				
Students have access to digital devices connected to the Internet at home				
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Digital integration				
The school administration supports the integration of digital technologies in the classroom				
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
The curriculum				
The curriculum facilitates and supports the use of digital technologies in the classroom				
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
colleagues use of digital technologies				
Many of my colleagues use digital technologies in the classroom				
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Ending Questions				
How would you now, after responding to the questionnaire, assess your digital competence as a teacher? Assign a level of competence from A1 to C2, where A1 is the lowest and C2 the highest level.				
A1: Newcomer A2: Explorer	B1: Integrator B2 (Expert)	C1 (Leader) C2 (Pioneer)		
Do you want to save your personal result? Then let us send it directly to your inbox.				
1. Enter your email 2. No thanks - I do not want to save my result				

Appendix 3. Online Link



RESEARCH INFORMATION PAGE and the RESEARCH LINK

Dear participant,
You are invited to the MA research named " An Investigation of Digital Competences of English Language Instructors", conducted by Ahmet Kablan, an MA student at the Faculty of Education Yildiz Technical University, and the Thesis advisor Prof. H. Gülru Yuksel. The research aims to investigate the digital competency levels of English Language Instructors. The research has been approved by the Academic Ethics Committee of the Yildiz Technical University. All the data obtained from you will be strictly confidential. This research contains no risk.

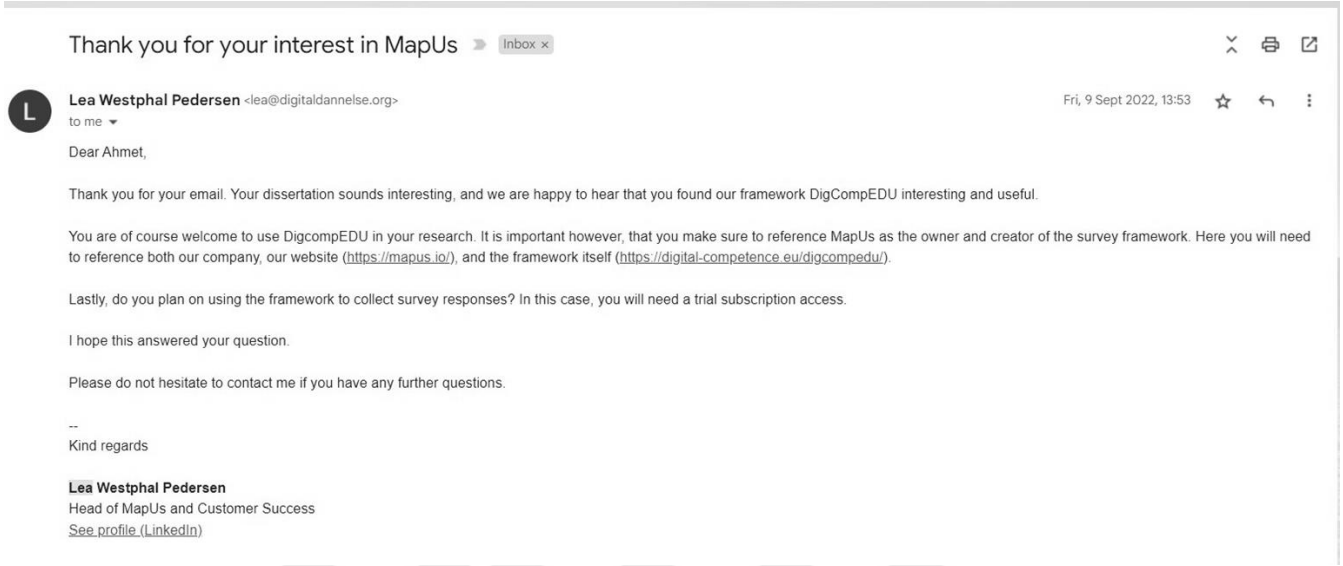
After your approval below, you will be directed to the questionnaire page with a link connecting to DigCompEdu. On the **"name"** section please write **"ANONYMOUS"**. At the end of the questionaire, the e-mail section is also optional.

The questionnaire will take approximately 15 minutes.

Thanks for sparing time and participating.

Researcher
Ahmet Kablan

Appendix 4. Consent email from MapUs



Thank you for your interest in MapUs Inbox ×

Lea Westphal Pedersen <lea@digitaldannelse.org> Fri, 9 Sept 2022, 13:53

to me

Dear Ahmet,

Thank you for your email. Your dissertation sounds interesting, and we are happy to hear that you found our framework DigCompEDU interesting and useful.

You are of course welcome to use DigcompEDU in your research. It is important however, that you make sure to reference MapUs as the owner and creator of the survey framework. Here you will need to reference both our company, our website (https://mapus.io/), and the framework itself (https://digital-competence.eu/digcompedu/).

Lastly, do you plan on using the framework to collect survey responses? In this case, you will need a trial subscription access.

I hope this answered your question.

Please do not hesitate to contact me if you have any further questions.

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Kind regards

Lea Westphal Pedersen
Head of MapUs and Customer Success
See profile (LinkedIn)