

REPUBLIC OF TÜRKİYE
SAKARYA UNIVERSITY
INSTITUTE OF EDUCATIONAL SCIENCES
ENGLISH LANGUAGE TEACHING DEPARTMENT

EXAMINING THE ROLE OF SELF-EFFICACY AND TEACHER AUTONOMY
ON THE DIGITAL COMPETENCE OF THE SECONDARY SCHOOL EFL
TEACHERS

MASTER'S THESIS

TUĞBA YALÇIN

SUPERVISOR

ASSIST. PROF. DR. ELİF BOZYİĞİT

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DECLARATION

I declare that I prepared this study following the Thesis-Project Writing Guide of Sakarya University Institute of Educational Sciences:

- I have obtained and presented all the information and documents included in the thesis in accordance with academic and ethical rules,
- I have referred to and cited the works as sources,
- I have not altered any changes in the data used,
- I have not submitted the entire thesis or any part of it as another thesis study.

Tuğba YALÇIN

ACKNOWLEDGEMENTS

First of all, I extend my deepest gratitude to my thesis advisor Assist. Prof. Dr. Elif Bozyiğit for her continuous support and patience, invaluable guidance, and insightful feedback throughout the entire process.

I would like to extend my heartfelt gratitude to the committee of my thesis, Prof. Dr. Mehmet Barış Horzum and Assist. Prof. Dr. Cemil Gökhan Karacan, for their valuable and constructive feedback on my thesis.

Special thanks to Assoc. Prof. Dr. Cihat Atar and Assist. Prof. Dr. Merve Savaşçı for their immense knowledge and expert opinions on the scales used in my thesis study.

I would also like to send my sincere thanks to the senior instructor Yasin Üngören for his advice on data analysis process.

For their time and contribution, I also extend my sincere gratitude to the study participants.

I would also like to express my gratitude for Sakarya University's library services (VETIS) for providing access to an extensive array of scholarly resources and eligible databases. This access significantly contributed to my thesis.

Last but not least, I owe my greatest thanks to my parents for all their support and encouragement. I feel indebted to them.

ABSTRACT

EXAMINING THE ROLE OF SELF-EFFICACY AND TEACHER AUTONOMY ON THE DIGITAL COMPETENCE OF THE SECONDARY SCHOOL EFL TEACHERS

Tuğba YALÇIN, Master's Thesis

Supervisor: Assist. Prof. Dr. Elif BOZYİĞİT

Sakarya University, 2024.

Integrating digital tools and utilizing digital resources into classes are a must for today's teaching process. Based on the review of the current research on digital competence, it can be concluded that technological developments in all walks of life are influential in education as the more digitized the society is, the more demand requires for educators to keep up with the digital era. Since teachers' beliefs may have a significant impact on their teaching, digital competence levels of teachers and self efficacy and teacher autonomy require to be examined as a whole. In this respect, this study focuses on finding the relation among digital competence of secondary school EFL teachers and their self-efficacy, autonomy to identify which one predicts the others to what extent. This study follows a quantitative research method and a correlational research design, with data collected through an online questionnaire employing scales from scales of DIGIGLO Tool (Alarcón, Jimenez and Vicente-Yagüe, 2020), Teacher Efficacy scale (Hoy and Woolfolk, 1993), and Teacher Autonomy scale (Pearson and Moomaw, 2006). Convenience sampling was utilized to recruit the participants, and 301 EFL teachers working at secondary schools in Turkish context made up of the participants. A number of validity and reliability tests was conducted to assess whether data was suitable for the analysis. Later, Pearson correlation analysis, and multiple regression analysis were performed for analyzing the collected data. The findings revealed that there is a moderately positive and statistically significant relationship between eight factors of digital competence, and self-efficacy. Additionally, there are low to moderately positive relationships among sub-factors of digital competence and teacher autonomy, and of self-efficacy and sub-factors of teacher autonomy. All of these findings were discussed in the study in detail, and implications were provided for teachers, headmasters and authorities, and researchers.

Keywords: Digital competence, Self-efficacy, Teacher Autonomy, English Language Teachers

ÖZET

ORTAOKUL İNGİLİZCE ÖĞRETMENLERİNİN DİJİTAL YETERLİKLERİ ÜZERİNDE ÖĞRETMEN ÖZ-YETERLİK VE ÖĞRETMEN ÖZERKLİĞİNİN ROLÜNÜN İNCELENMESİ

Tuğba YALÇIN, Yüksek Lisans Tezi

Danışman: Dr. Öğr. Üyesi Elif BOZYİĞİT

Sakarya Üniversitesi, 2024.

Dijital araçları öğretime entegre etmek ve derslerde dijital kaynakları kullanmak günümüzdeki öğretim süreci için bir gerekliliktir. Dijital yeterlilik üzerine yapılan güncel araştırmaların incelenmesine dayanarak, yaşamın her alanında teknolojik gelişmelerin eğitim üzerinde etkili olduğu sonucuna varılabilir. Toplum ne kadar dijitalleşirse, eğitimcilerin dijital çağa ayak uydurması gerekliliği o kadar artar. Öğretmenlerin inançlarının öğretimleri üzerinde önemli bir etkisi olabileceği göz önüne alındığında, öğretmenlerin dijital yeterlilik düzeyleri ile öz yeterlikleri ve öğretmen özerklikleri bir bütün olarak incelenmelidir. Bu bağlamda, bu çalışma, ortaokul İngilizce öğretmenlerinin dijital yeterlilikleri ile öz yeterlikleri ve özerklikleri arasındaki ilişkiyi belirlemeye odaklanmakta ve bu faktörlerden öz yeterlik ve özerklik düzeylerinin, dijital yeterlilik düzeyini ne kadar öngördüğünü tespit etmeyi amaçlamaktadır. Ayrıca, ortaokul İngilizce öğretmenlerinin dijital yeterlilik düzeyinin cinsiyet, eğitim geçmişi ve öğretim deneyimine göre farklılık gösterip göstermediğini ele almayı hedeflemektedir. Bu çalışmada, nicel araştırma yöntemi ve ilişkisel araştırma deseni kullanılmıştır ve veriler, Pearson ve Moomaw (2006) tarafından geliştirilen Öğretmen Özerklik Ölçeği, Tschannen-Moran, Woolfolk Hoy ve Hoy (1998) tarafından geliştirilen Öğretmen Öz Yeterlik Ölçeği ve Alarcón, Jimenez ve Vicente-Yagüe (2020) tarafından geliştirilen DIGIGLO Aracı'ndan ölçekler içeren bir anket kullanılarak çevrimiçi toplanmıştır. Türkiye bağlamında çalışan 301 ortaokul İngilizce öğretmeni katılımcıları oluşturmuştur. Verilerin analize uygun olup olmadığını değerlendirmek için çeşitli geçerlilik ve güvenilirlik testleri yapılmıştır. Daha sonra, toplanan verilerin analizi için Pearson korelasyon analizi ve çoklu regresyon analizi gerçekleştirilmiştir. Bulgular, dijital yeterlilik ile öz-yeterlik arasındaki sekiz faktör arasında orta derecede pozitif ve istatistiksel olarak anlamlı bir ilişki olduğunu ortaya koymuştur. Ayrıca, dijital yeterliliğin alt faktörleri ile öğretmen özerkliği, ve öz-yeterlik ile öğretmen özerkliğinin alt faktörleri arasında düşükten orta derecede pozitif ilişkiler

bulunmuştur. Bu bulgular çalışmada detaylı bir şekilde tartışılmış ve öğretmenler, okul müdürleri, yetkililer ve araştırmacılar için çıkarımlar sağlanmıştır.

Anahtar Kelimeler: Dijital yeterlilik, Öz Yeterlik, Öğretmen Özerkliği, İngilizce Öğretmenleri

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ABBREVIATIONS

A	: Assessment
AI	: Artificial Intelligence
CA	: Curriculum Autonomy
C-19	: COVID 19
DC	: Digital Competence
DE	: Digital Environment
DR	: Digital Resources
DT	: DIGIGLO Tool
DigCompEdu	: Digital Competence of Educators
DYS	: Doküman Yönetim Sistemi (an official documentation system of Turkish Ministry of National Education)
EBA	: Eğitim Bilişim Ağı (An online platform governed by Turkish Ministry of National Education)
EFL	: English as a Foreign Language
EL	: Empowering Learners
ELT	: English Language Teaching
EDM	: Extrinsic Digital Motivation
EU	: The European Union
FATİH	: Fırsatları Artırma ve Teknolojiyi İyileştirme Hareketi (The Movement to Enhance Opportunities and Improve Technology- A Project by Turkish MoNE)
FL	: Foreign Language
FLDC	: Facilitating Learners' Digital Competence
GTA	: General Teaching Autonomy
ICT	: Information and Communication Technology

L2	: Second Language
MoNE	: Ministry of National Education
PE	: Professional Engagement
TAS	: Teacher Autonomy Scale
TES	: Teachers' Self-Efficacy Scale
TL	: Teaching and Learning

CHAPTER I

INTRODUCTION

This chapter is allotted to present the rationale behind this current study, to introduce the purpose and significance of the study, to present sub-problems, assumptions, limitations, and to overview definitions of the terms.

1.1. Statement of the problem

Technology has been influential in all walks of life for a couple of decades. The widespread use of digital technologies, as cited in Redecker (2017), has had a profound impact on almost every aspect of our lives, including how we work, interact, unwind, organize our days, and acquire knowledge and information, and it has changed our emotions and behaviors. Children and young adults are growing up in an atmosphere where digital devices are ubiquitous (Redecker, 2017). People frequently utilize the Internet and other digital technologies in digital environments to fulfill personal requirements by engaging in activities like online and offline gaming, banking, shopping, and social sharing (Karakuş and Kılıç, 2022). In a similar vein, According to Ala-Mutka (2011), the ways in which people work, learn, communicate, access information, and unwind are all being altered by the growing usage of technology in both society and the economy.

As the technology itself has an evolving nature, the areas influenced by it have to keep up with this innovatively. People require more than just the ability to use tools, and they also need the drive and capability to strategically and creatively utilize these tools in various work and life situations, for their own advantage as well as the benefit of their society, the economy, and the environment (Ala-Mutka, 2011). For all 21st-century workers, digital competency is intimately related to professional development, therefore it will be necessary for everyone to use digital tools to keep their professional abilities updated (Karsenti, Poellhuber, Parent, and Michelot, 2020). Also, high levels of digital competence are now required for an increasing number of jobs, and many new openings are based on specialized digital abilities (Smagulova, Sarzhanova, Tleuzhanova, and Stanciu, 2021).

ICT has significantly altered our culture, the environments in which children are raised, what is taught, and how it is taught (From, 2017). Taking these significant impacts into account, education is one of those core areas which has been influenced by technology for numerous reasons such as political, social, and economical. In the framework of the digital economy, a high level of digital proficiency is required for professional fulfillment of the personality, and one way to improve these competencies is through education (Kuzminska, Mazorchuk, Morze, Pavlenko, and Prokhorov, 2019). In addition, Veen (2007) asserts that the educational system is determined and influenced by three factors, including society, technology, and economy. Considering that education is one of the most influential factors determining a country's citizenship policy, it is also in charge of raising awareness in citizens about appropriate technology use and information access. In this regard, it is crucial that people are properly guided and are aware of their duties when carrying out these digital transactions because participants in digital environments need to be aware of the actions and responsibilities of the individuals they communicate with, awareness is crucial to guaranteeing efficient digital communication (Karakuş and Kılıç, 2022).

It is commonly accepted that students should attend school to develop the fundamental skills necessary for every citizen, including digital competence (Ilomäki, Paavola, Lakkala, and Kantosalo, 2016). For individuals to actively engage in digital societies, teachers must possess digital competences on both personal and professional level, in addition to their instructional and pedagogical expertise (Karakuş and Kılıç, 2022). Considering that teachers serve as role models for both their pupils and society, they must possess these competencies in order to take part in society both personally and professionally as citizens (Gudmundsdottir and Hatlevik, 2018; Karakuş and Kılıç, 2022; Redecker, 2017). As a result, as digital technologies become a necessary component of daily work, educators are being forced to reevaluate and update outdated teaching methods (Pettersson, 2018).

The methods used to teach second languages and foreign languages are drastically changing today, and technology development has made ICT an essential educational tool (Girgin, 2011; Malinee and Senthamarai, 2020). In particular, English language education is one of the many spheres of human life where digital literacy is becoming important (Iskandar, Sumarni, Dewanti, and Asnur, 2022). To Han and Reinhardt (2022), language learning takes place in increasingly independent, independent-directed, and creative ways outside the boundaries of regular schools in today's ubiquitous digital world. Fadini and Finardi (2015) also highlight the significance of keeping up with social and technical

advancement, and they ascertain that one must consider the effects of recent changes in education generally and in English language teaching (ELT) particularly. In addition, Jordano de la Torre (2019) assumes that pioneers in the classroom usage of technology have been language instructors, furthermore, the Internet is no longer sufficient as a resource or a venue for communication. Our students are demanding learning strategies that are tailored to their requirements because social media and applications for everything are commonplace in the modern age. Also, by introducing various tools, assignments, and technological support in an online learning environment, teachers of language should encourage and support their students' autonomy and online communication (Scanni, 2022).

Furthermore, various factors influence teachers' methods in their teaching practice. In this vein, teachers' self-efficacy, defined as their confidence in their ability to plan and execute necessary actions to succeed in specific tasks within particular contexts, plays a crucial role (Tschannen-Moran et al., 1998). Additionally, teachers' beliefs about their teaching can significantly impact their integration of digital tools both inside and outside the classroom. As language learning extends beyond the traditional four-wall classrooms, the use of technology in English Language Teaching (ELT) is essential in the teaching process.

Another psychological construct, teacher autonomy, is related to teachers' perceptions of their ability to influence the workplace (Pearson and Hall, 1993) and the freedom they have in engaging in the teaching process (Little, 1991). As a consequence, teacher autonomy can significantly influence teachers' engagement with digital resources, including their creation and the effort they put to learn digital technologies. Teacher autonomy not only fosters innovation in teaching practices but also enhances teachers' professional development, enabling them to keep up with new technology and meet the diverse needs of their learners.

As language learning is a collaborative and interactive process, integrating digital tools in language classes helps promote learners' language development. Regarding that learners do not have the same features of the ones in the past, teachers must be willing to incorporate technology into their lessons if they want to keep up with their students (Ala-Mutka, 2011; From, 2017; Karsenti, Poellhuber, Parent and Michelot, 2020; Kuzminska, Mazorchuk, Morze, Pavlenko and Prokhorov, 2019). As more students use Web 2.0 tools to enhance their learning, teachers who were trained in a more traditional educational system are being forced to change the way they instruct their classes (Kayar, 2019). Keeping in mind that integrating digital tools in education enhances the learning process,

this study aims to investigate the relationships among digital competence, self-efficacy, and autonomy of English language teachers.

1.2. Purpose and significance of the study

In teaching, there has been a shift from traditional materials to the integration of digital tools. As a research topic, digital competence has attracted a lot of interest from researchers for a couple of decades on its own. In particular, it has gained importance since the COVID-19 pandemic (Fauzi, 2021; Karakuş and Kılıç, 2022; Meirovitz, Russak, and Zur, 2022; Scanni, 2022; Wong and Moorhouse, 2021). In this regard, Bayrak Karslı, Küçük, Kılıç, and Albayrak-Ünal (2023) suggest that it is now even more crucial to support educators in building their digital competencies with the COVID-19 pandemic process.

Many authors have examined the concept of digital competence separately. Digital competence of teachers may be influenced by their beliefs in their teaching and their perceptions of how well they teach, in this regard, psychological constructs seem to be neglected when reviewing the studies on digital competencies of teachers. This current study is significant in that it seeks to address the relations among digital competence of teachers and their self-efficacy, autonomy; however, research on the relationships among aforementioned concepts seems relatively rare in the EFL context. Each concept has been examined either separately or as a two-term together. For instance, self-efficacy and digital competence have been dealt with in some research (Arpacı, 2017; Erdin and Uzun, 2022; Hatlevik, 2017; Hickson, 2016), and teacher autonomy and digital competence have been investigated in a few studies (Kameshwara, Eryılmaz, Tian, and Sandoval-Hernandez, 2020; Koçak and Karatepe, 2022). Furthermore, teacher autonomy and self-efficacy have been explored as independent constructs by few authors (Skaalvik and Skaalvik, 2014). Additionally, there is currently no study that has investigated the digital competence of secondary school English language teachers, alongside the other constructs considered in this research. Given the existing gap in the literature and the lack of exploration into the extent to which the self-efficacy and autonomy of secondary school English language teachers in the Turkish context influence digital competence, this study aims to address this gap and make a substantial contribution to the larger area of education research by

focusing on these teachers as the main participants. It is hoped that the research findings will offer practical perspectives for teachers, school administrators, and authorities, promoting a more sophisticated comprehension of the intricate relationships among self-efficacy, autonomy, and digital competency.

1.3. Problem sentence

This study aims to examine the relationships among the digital competence, autonomy, and self-efficacy levels of English as a foreign language teachers. The participants of the study were recruited from secondary school English language teachers in Türkiye. To this end, this study seeks to find out the answer of following research question:

1. To what extent can EFL teachers' digital competence be predicted by their teaching self-efficacy and their autonomy levels?

1.4. Sub-problems

The instrument used to measure the digital competence of the participating teachers includes

eight factors. In this regard, the study also examines the extent to which teachers' self-efficacy

and autonomy levels predict these factors. The sub-problems are listed as follows:

- 1.1. To what extent can EFL teachers' digital competence regarding professional engagement factor be predicted by their teaching self-efficacy and their autonomy levels?
- 1.2. To what extent can EFL teachers' digital competence regarding digital resources factor be predicted by their teaching self-efficacy and their autonomy levels?
- 1.3. To what extent can EFL teachers' digital competence regarding teaching and learning factor be predicted by their teaching self-efficacy and their autonomy levels?
- 1.4. To what extent can EFL teachers' digital competence regarding assessment factor be predicted by their teaching self-efficacy and their autonomy levels?
- 1.5. To what extent can EFL teachers' digital competence regarding empowering learners factor be predicted by their teaching self-efficacy and their autonomy levels?
- 1.6. To what extent can EFL teachers' digital competence regarding facilitating learners' digital competence factor be predicted by their teaching self-efficacy and their autonomy levels?
- 1.7. To what extent can EFL teachers' digital competence regarding digital environment factor be predicted by their teaching self-efficacy and their autonomy levels?
- 1.8. To what extent can EFL teachers' digital competence regarding extrinsic digital engagement factor be predicted by their teaching self-efficacy and their autonomy levels?

1.5. Assumptions

The participants for this study were recruited from EFL teachers having different backgrounds, and years of teaching experience. Three different scales, designed to extract information about digital competence, self-efficacy, and teacher autonomy, were used as data collection tools through an online questionnaire in English language. As a result, it is assumed that all the participants participated into the study voluntarily. In addition, they are assumed to comprehend the questions in the questionnaire as they are English as a foreign language teachers, and they were expected to give honest answers to state their ideas and perceptions.

1.6. Limitations

In this study, data were collected through a convenience sampling method. After receiving permission from the Ministry of National Education (MoNE) of Türkiye to collect data, the web link to the questionnaire was sent to schools via MoNE's documentation system, known as DYS (Doküman Yönetim Sistemi- Document Management System-), where teachers typically mark documents as read without further engagement. Consequently, the questionnaire was not answered by as many participants as anticipated, and the participant rate might not adequately represent all English language teachers in Türkiye.

For further research, it is recommended to include a larger sample size and to conduct a comparative analysis of the digital competence of teachers at different levels of education. Additionally, due to the nature of the data collection tool, participants might underestimate or overestimate their current status while responding to the questionnaire. Future studies should complement quantitative data with qualitative methods such as classroom observations and narrative inquiries to explore actual practices.

1.7. Definitions of terms

Digital Competence: The use of ICT with assurance, critical thinking, and creativity to achieve goals about work, employability, education, leisure, inclusion, and/or social engagement (Redecker, 2017).

Teacher Efficacy: The confidence a teacher has in his or her ability to plan and carry out the steps necessary to successfully complete a particular teaching activity in a given situation (Tschannen-Moran, Woolfolk Hoy, and Hoy. 1998).

Teacher Autonomy: A concept related to the perceptions of teachers regarding their control on work environment (Pearson and Hall, 1993).

CHAPTER II

LITERATURE REVIEW

This chapter is allotted to present how digital competence, self-efficacy, and teacher autonomy are investigated in the relevant research. The review of the literature reveals key themes in the studies as follows:

- components of digital competence,
- digital competence in education,
- digital competence studies in ELT (with pre-service teachers; with in-service teachers; with learners; and with both learners and teachers),
- historical background of teachers' self-efficacy,
- definitions and domains of self-efficacy,
- scales developed to gauge self-efficacy,
- studies on self-efficacy,
- learner autonomy as a starting point of research on teacher autonomy,
- definitional terms and domains of teacher autonomy,
- teacher autonomy and ELT,
- research on teacher autonomy.

2.1. Components of digital competence

Several concepts have been used to define people's proficiency in using technology in the existing literature so far. In this regard, authors used 'media literacy', 'information literacy', 'ICT (Information and Communication Technology) literacy' (Katz and Macklin, 2006; Røkenes and Krumsvik, 2016), 'digital fluency' (Pinho and Lima, 2013;), 'digital literacy' (Iskandar et al., 2022; Oblinger and Oblinger, 2005) and 'digital competence' (Al Khateeb, 2017; Ilomäki, Kantosalo and Lakkala, 2011; Pettersson, 2018; Røkenes and Krumsvik, 2016) in general. All of these notions reflect the nature of technology in that they are used ubiquitously and concurrently. According to the review study conducted by Ilomäki, Paavola, Lakkala and Kantosalo (2016), there were 34 different names related to information and technology knowledge used in total in the literature, and they were widely distributed. Nevertheless, the most common concepts to

refer to technology use are composed of digital literacy (including digital literacies or digital literacy skills) (Buckingham, 2016; García-Martín and García-Sánchez, 2017; Ng, 2012), new literacies (including new literacy skills/practices) and media literacy (including media literacies or digital literacy skills) (Alvarez, Salavati, Nussbaum, and Milrad, 2013), multiliteracies (including multiple literacies). Similarly, Iskandar et al. (2022, p. 77) identify eleven key terms that are associated with digital literacy: information literacy, media literacy, new literacies, ICT competence, digital literacy, digital skills, technology literacy, digital competence, ICT skills, multiliteracies, and ICT literacy, and these essential terms provide clues to the domain of digital literacy. Regarding the concepts related to technology in learning, digital competence, internet skills, digital skills, ICT literacy and digital literacy have been found in the research literature (Engen, Giæver, Gudmundsdottir, Hatlevik, Mifsud and Tomte, 2014). Currently, AI (Artificial Intelligence) has also gained importance in education, and its significance has been discussed in several research (Liveley, 2022; Kocaman-Karoğlu, Bal-Çetinkaya and Çimşir, 2020; Kong, Korte, Burton, Keskitalo, Turunen, Smith, Wang, Lee and Beaton, 2024). Artificial intelligence refers to programmed machines that exhibit characteristics associated with the human mind, such as learning and problem-solving; it uses machine learning to complete tasks by leveraging digital information sources known as big data, and the use of this technology in educational settings can create personalized learning environments (Kocaman-Karoğlu et al., 2020). AI in education has the potential to bridge educational gaps and challenges, mitigate urban-rural learning disparities, revitalize languages and cultures, and address global educational issues (Kong et al., 2024). In summary, the integration of concepts like digital literacy, new literacies, and AI into educational settings highlights the evolving role of technology in enhancing learning environments and addressing global educational challenges.

In particular, the phrase “media literacy” was first popularized in the 1970s and is still often used today. On the other hand, information literacy studies, a branch of research that has mostly grown in the field of library science since the 1970s, also contribute to the reflection on literacy. Gilster (1997, as cited in Calvani, Fini, Ranieri and Picci, 2012) who coined the phrase “digital literacy” and gave it its original definition, places more emphasis on critical thinking skills than IT skills. However, the concept of digital competence is a relatively new concept that lacks a clear definition (Ilomäki et al., 2016).

When reviewing the related literature, it is seen that the concepts of digital literacy and digital competence are general terms, while terms such as ICT skills, information literacy, and media literacy are components of these two general concepts. Stating that digital literacy covers the entirety of the knowledge and skills required for media literacy, information literacy, internet literacy, and ICT literacy is insufficient, hence the concept of digital literacy also includes other elements (Ferrari, 2012). Further, Calvani et al. (2012) draw conclusion that digital literacy is a broader term than ICT and includes all the mentioned concepts in the literature as information literacy, media literacy, and visual literacy. The scope of digital competence encompasses a number of disciplines, including technology and computing, media and communication, information science, and literacy, and it is made up of a variety of skills and abilities (Ilomäki et al., 2011). The concept of “digital competence” is an evolving target that includes a broad spectrum of topics and literacies, constantly adapting as new technologies arise. Digital competence represents the convergence of various fields. Currently, being digitally competent involves understanding media (since most media have been or are being digitized), critically finding and evaluating information (due to the widespread use of the Internet), and interacting with others through various digital tools and applications (Ferrari, 2012).

In particular, there is controversy about whether the terms “digital literacy” and “digital competency” refer to the same thing (McGarr and McDonagh, 2019). The notions of digital competence and literacy are so interwoven that they are usually used for one another in the same manner, even in the same papers (Ferrari, 2012; Redecker, 2017; Røkenes and Krumsvik, 2014). Seeing that both notions are regarded as the same in some research, Al Khateeb (2017) identifies the distinction between those two by asserting that digital competency is said to be primarily driven by digital literacy, further, the concept of competence is thought to be more complicated than literacy because it places a greater emphasis on knowledge and skill acquisition than on access and usage. In the review study conducted by Pettersson (2018), who favors the term ‘digital competence,’ it is highlighted that there remains no clear consensus or shared understanding regarding the definition and components of digital competence in educational settings, despite analyzing research from the past decade. Instead, Pettersson (2018) asserts that the definitions of digital competence and its related terms (such as digital pedagogy, ICT competence, digital literacy, and pedagogical digital competence) are rarely clear and are frequently used as synonyms to describe the competencies required of actors engaged in educational settings.

According to some perspectives, the use of these concepts in the literature varies on some factors such as linguistic and/ or contextual. To McGarr and McDonagh (2019), the distinction between the notions of digital literacy and digital competence is essentially a linguistic matter. Seeing that the term ‘digital competence’ is quite recent in the literature, they conclude that digital competence is related to educational settings, whereas digital literacy has a much broader scope of meaning. In a similar vein, Ilomäki et al. (2016) also remark that digital competence show up in publications devoted to educational research. As Røkenes and Krumsvik (2016) unveil, ‘digital competence’ is more frequently used to refer to the term related to technological skills and knowledge in Norwegian context. Ala-Mutka (2011) seems to dismiss this debate by asserting that developing distinct definitions for literacy and competencies inside and outside of the digital realm is becoming pointless because digital processes and tools are evolving into commonplace mediators for all kinds of jobs and are becoming an essential component of every skill or ability.

As a result, it is chosen to use digital competence in this manner since this study specifically focuses on technology use in foreign language education. In this section, digital competency is covered in more detail.

Digital competence is a relatively new concept that lacks a clear definition (Ilomäki et al., 2016), and it has connections to both technological advancement and the political aspirations and demands of modern citizenship (Ilomäki et al, 2011). It originally emerged in policy-related publications and papers, and it was not included in more recent policy documents such as The OECD’s Definition and Selection of Competencies (Ilomäki et al., 2016). According to the analysis of the research on digital competence by Pettersson (2018), digital competence is addressed through four overarching themes within this domain, namely: policy and guidance documents, organizational structures, strategic leadership, and educators and their instructional methods. On the contrary, there have been a wide array of definitions for DC in the literature as well. Though Ala-Mutka (2011) claims that there is no definition of digital competence found in some prominent English dictionaries such as Webster13 or Chambers, she argues that those notions are included in online Chambers 21st Century Dictionary and Thesaurus in an isolated fashion as ‘competence’ and ‘digital’. According to her findings, competence is related to capability, while digital is related to 1) a set of numbers, 2) a device to process information, 3) electronics.

Most of these definitions appear in policy-based and educational papers due to the aforementioned reasons. As the concept itself has connotations related to citizenship and learning, the EU has included a lot of papers addressing digital issues since the early 2000s. The Recommendation of the European Parliament and the Council (2006) identified eight essential competencies for lifelong learning: proficiency in the native language, fluency in foreign languages, mathematical skills, basic scientific and technological knowledge, digital literacy, learning adaptability, social and civic awareness, entrepreneurial skills, and cultural appreciation and expression. (Ala-Mutka, 2011). To this end, The European Union has acknowledged ‘Digital Competence’ as one of the crucial competences for lifelong learning according to the 2006 European Recommendation on Key Competences (Ferrari, 2012).

According to Ferrari (2012), ‘Digital competence’ encompasses the ability to utilize ICT and digital media for various purposes such as work, recreation, education, and social interaction. This includes communication, collaboration, problem-solving, content creation and sharing, information management, as well as effective knowledge building through critical, creative, independent, flexible, ethical, and reflective means. To illustrate this definition perceptibly, Ferrari (2012, pp. 30) outlines the following diagram:

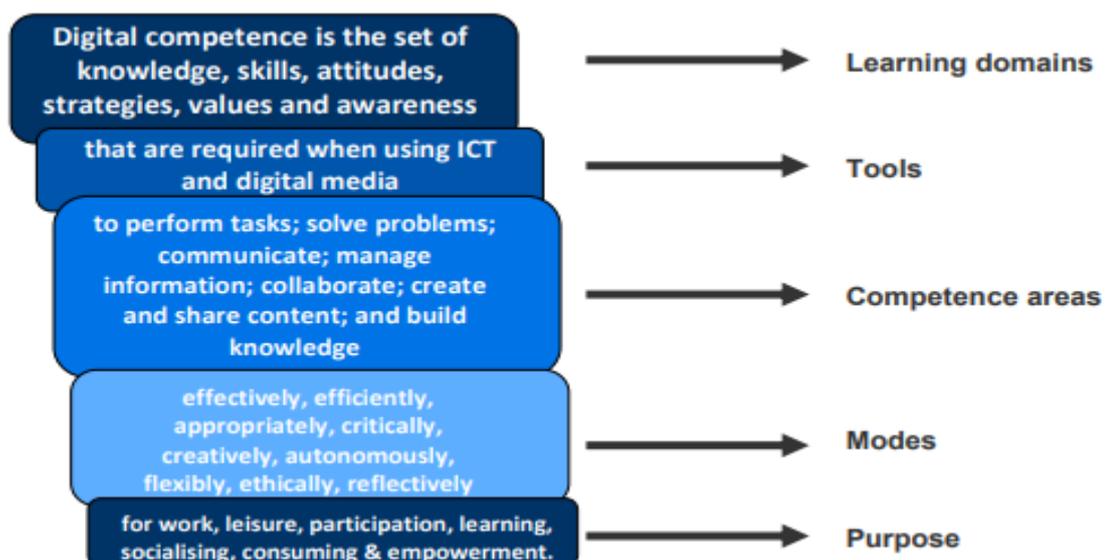


Figure 1. Aspects of the digital competence definition

Later on, Redecker (2017, p. 90) simplifies this definition and sums it up as follows: ‘Digital competence’ involves the assured, analytical, and imaginative use of ICT to

accomplish goals related to work, labor, learning, leisure, social inclusion, and/or active participation in society.

When reviewing the related literature, Maiier and Koval (2021) propose a brief definition: Digital competence is a collection of digital knowledge, skills, and abilities that helps all of its participants in the teaching and learning process.

The European Digital Competence Framework for Citizens was developed in an attempt to assess and certify the digital competence of individuals in the 2000s, and it has gained widespread acceptance as a tool for teacher training and professional development inside and outside of Europe since then. According to the 2016 revision, this framework, which consists of six distinct educational domains, contains a total of 22 skills (Redecker, 2017). Below, the DigCompEdu Competences and their relation to each other are presented in a graph:

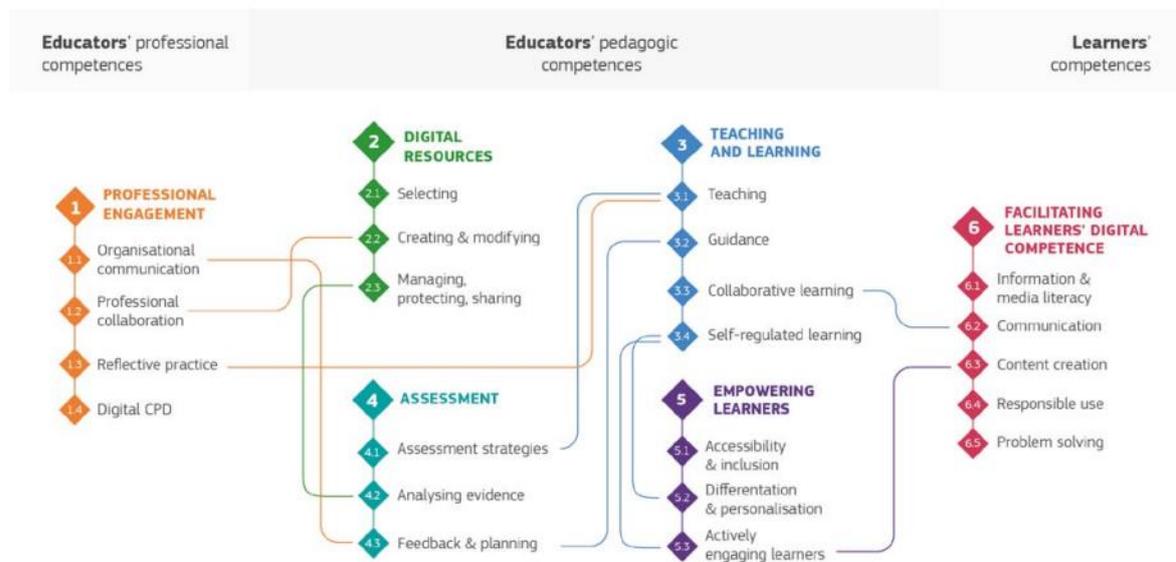


Figure 2. DigCompEdu competences and the link among the competences (Redecker, 2017, pp.16)

The areas 2 through 5 make up the core of the DigCompEdu Framework. These areas collectively explain educators' digital pedagogic competence, or the digital skills they require to provide effective, inclusive, and creative teaching and learning methods (Redecker, 2017).

To Karsenti et al.'s study (2020), the Digital Competency Framework is divided into 12 dimensions which are comprised of several components, and three stages of digital competence include competency, dimensions, and elements. Below, Figure 3 demonstrates those dimensions:

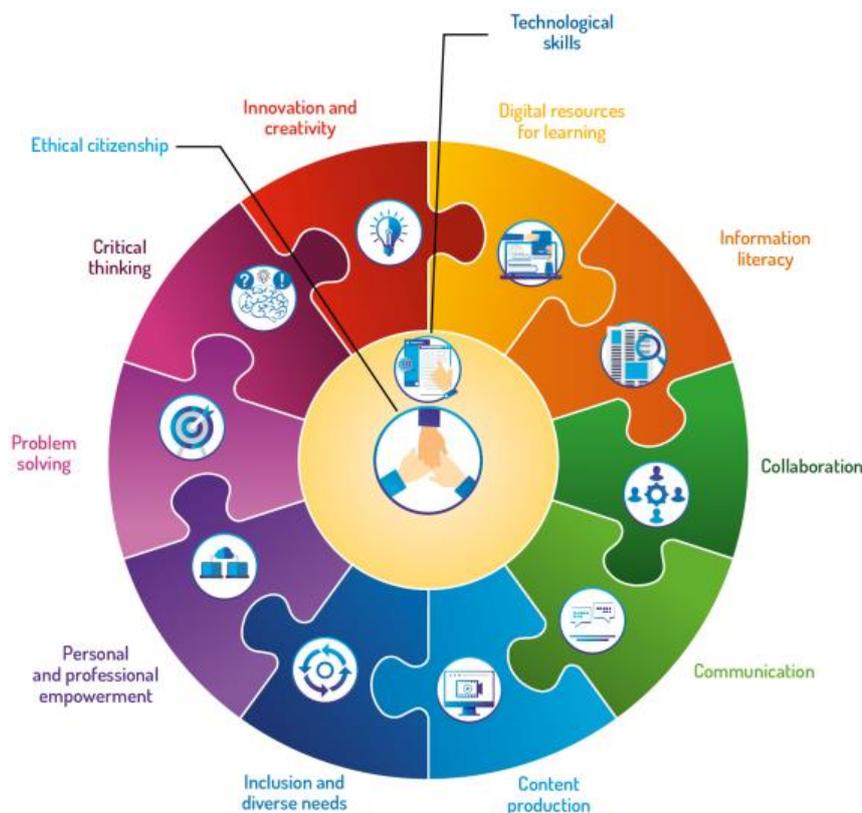


Figure 3. Key components of digital competency framework (Karsenti et al., 2020, pp. 13)

According to the visual representation above, the dimensions are closely interrelated with each other, and each component has a significant role in developing subskills such as communication and collaborative skills while accomplishing an educational task.

Likewise, Kožuh, Maksimović and Osmanović Zajić (2021) note that the following steps are necessary for the development of teachers' digital competences:

1. The educational potential of digital technologies is recognized,
2. teachers are taught to use them,
3. they are aware of when and where to use them,
4. they are trained to do so in accordance with the needs of the subjects they teach.

Overall, digital competence is a key component of teaching and learning in today's learning environment. Further, it helps enhance subskills such as collaboration, communication, and innovation which constitute the backbone of language learning. Mohommad, Assam and Saidi (2020) propose that technology advancements and modifications are significant as long as they help advance the teaching of foreign languages. Cephe and Balçıkanlı (2012) support this idea by stating that it is highly recommended that English language education be reinforced with web technology because language acquisition extends beyond the confines of the classroom setting. Hence, digital competence becomes a prerequisite for foreign language teaching.

2.2. Digital competence in education

Addressing the necessity of keeping up with the era, the integration of digital tools into education is of major importance. Prensky (2005), one of the advocates of use of the digital tools in education, asserts that even though we are now in the digital age, educators are still doing a lot of things in an old-fashioned manner. It is time for education leaders to look up from the daily grind and take in the changing environment.

In general, the teaching profession is faced with ongoing demands and problems that call for a new, more advanced set of competencies than in the past (Benali, Kaddouri, and Azzimani, 2018). In a similar vein, Redecker (2017) affirms that that digital technology can facilitate classroom differentiation and individualized education by tailoring learning activities to each student's proficiency level, interests, and learning needs. The rationale for adapting to the demands of the era is generally based on the fact that the requirements of individuals vary according to the current conditions. The necessity for citizens to possess relevant critical and creative skills places new requirements on educators across all educational levels. To this end, they must not only be fluent in digital tools, but also cultivate their students' competency in these tools and harness the power of digital technologies to enhance and innovate instruction (Ghomi and Redecker, 2019).

Prensky (2001a) introduced the concept of 'Digital Natives' to refer to contemporary students who are fluent in the digital language of computers. Conversely, individuals who were not raised in the digital era are termed 'Digital Immigrants' by Prensky. From a similar perspective, Veen (2007) refers to modern children as "Homo Zappiens" whose

lives have been profoundly altered by technology. Veen (2007) and Prensky (2001) seem to regard “Homo Zappiens” or “digital native”, the terms they coin respectively to refer to the generation born into the digital age, favorably and both of them believe that current education is far from keeping up with the demands of either this generation or the information society of the future. Because of the amount of digital input that Digital Natives got as children, Prensky (2001b) hypothesized that their brains are probably physically different from those of other people, and he argued that engaging digital natives in their "native tongue" through gaming learning is a desirable strategy. Yet, some of the authors argue that being born into such a digital age does not necessarily mean that everyone is adept at utilizing the tools offered in this age. At this juncture, Redecker (2017) remarks that this does not suggest that individuals inherently possess the skills required to use digital technology effectively and responsibly. Unlike Prensky, Thompson (2013) puts forward that the fact that new generation was born into digital age does not necessarily mean they are adept at adapting digital tools into learning, and findings of his study indicate that although they are generally regarded as ‘digital natives’, they still need to be guided by their teachers to exploit the benefits of digital tools in their learning process. Similar to Thompson, Pascual (2019) puts forward that students today are typically seen as digital natives who can adapt to technology changes quickly and successfully, however certain tools and approaches related to information and communications technology (ICTs) and digital media should be focused on in the classroom to help students become more digitally proficient.

In a similar vein, Scanni (2022) asserts that being ‘digital native’ does not guarantee using technologies for educational purposes according to the beliefs of teachers taking part in her study which focused on the application of distance education during the Covid-19 outbreak. Against the backdrop of the aforementioned discrepancies between those generations, it is now evident that students today process information and think in fundamentally distinct ways compared to previous generations due to the pervasive nature of the digital environment and the extensive level of their engagement with it (Prensky, 2001a). Further, he reminds teachers that they are instructors in the twenty-first century, that is why this entails supporting student decision-making, involving students in the creation of instruction, and soliciting feedback from students on the teaching methods they would use (Prensky, 2005).

Likewise, while educating students about the digital world, digital technology should be successfully incorporated into instructional strategies by teachers. In the teachers' digital era, individuals need to cultivate awareness, self-assurance, understanding, proficiency, capability, and ethical frameworks to ensure the efficacy of education (Karakuş and Kılıç, 2022). Benali et al. (2018) advocate that the strategic value of offering digital education should be recognized due to extensive utilization of digital tools and programs because pupils are impacted by teachers' abilities. In this respect, instructors must be able to utilize digital abilities and pedagogical skills together in the classroom.

Additionally, mastering the effective utilization of new information and digital technologies becomes indispensable for a modern teacher within the digitalization context, and it is vital to highlight that educators are currently focusing on creating own multimedia instructional tutorials with the goal of accomplishing particular educational goals, in addition to using the software and technological materials that already exist (Smagulova, Sarzhanova, Tleuzhanova, and Stanciu, 2021).

The twenty-first century has seen remarkable breakthroughs, and conventional classrooms with four walls are progressively fading into history, so learning and teaching are significantly distinct now than they were in the past (Erdin and Uzun, 2022). The pupils we are teaching right now grew up in an era of digital technologies, communication, and widespread access to information (Popescu and Cioui, 2011). Jones and Buchanan (2021) pose questions about what our quickly developing civilizations look like and how we will educate those future societies regarding the rationale for education and worldwide competent teachers. Therefore, schools need teachers who are technologically proficient in order to help students build their digital competence from K–12 (Gudmundsdottir, Hernández, Colomer, and Hatlevik, 2020).

Lockdowns and distance learning have made it necessary to rethink well-known technological resources in learning procedures and systems, but, even in the absence of COVID, these transformations have been simmering in the system and are currently unquestionably ready to take center stage in education, even after the pandemic (Meirovitz et al., 2022). The student actively participated in the educational process and collaborated with the instructor to create the course materials, in addition, learning is facilitated by cooperation, conversation, and sharing of opinions (Marković, Koch, and Frančić, 2012).

To encourage computer-supported teaching and learning, it is also vital to take into account how crucial it is to prepare foreign language (FL) teachers for the pedagogical use of digital resources (Pinho and Lima, 2013). Teachers and educators have begun to incorporate emerging technology into their activities as they gradually but steadily come to understand their potential, and Web 2.0 tools help foster the interaction and teamwork that are essential to successfully learning a foreign language (Başal, 2016). Thus, the purpose of FL instruction in the digital age should be to encourage the development of both communication and digital fluency, benefiting both students and members of the Information Society (Pinho and Lima, 2013).

Seeing that education has to evolve from traditional to modern teaching methods, language teaching is one of the primary fields of teaching, which requires innovation and being in tune with current movements. As a consequence, language teachers require being far more updated than anyone else. In this regard, digital competence becomes a prerequisite for teachers and educators in addition to their required skills to deliver the content for learning.

According to the report published by Turkish MoNE (2014), programs for lifelong learning underwent a transformation into a more structured framework. Türkiye introduced its National Qualifications Framework (NQF) in 2015, which comprises eight levels encompassing diverse qualifications and certificates within the Turkish Qualifications Framework (TQF). The framework was collaboratively developed and is currently administered by the Vocational Qualifications Authority (VQA), the Ministry of National Education (MoNE), and the Council of Higher Education (CoHE). According to a report by the European Training Foundation (2021), the TQF was initially proposed by MoNE in 2005 in response to the first consultation to European Qualifications Framework (EQF) (ETF, 2021) and it was incorporated into the new curricula in 2018 (MEB, 2018).

Hazar (2019) outlined that Türkiye, like Europe, has integrated digital technologies into education since the 1980s to enhance quality and equip students with skills for the information economy. In this vein, The TPACK (Technological, Pedagogical, and Content Knowledge) framework, originally based on Shulman's construct of PCK (Pedagogical Content Knowledge), was also introduced in Turkish curriculum, and it aims to improve the understanding and application of technology-related knowledge in teaching. It focuses on identifying and describing the specific knowledge that teachers require, integrating technological, pedagogical, and content knowledge to enhance teaching practices (Koehler and Mishra, 2009).

Additionally, Hazar (2019) listed the key initiatives in Turkish educational system as the following: Computer Assisted Education (1989-1991), the Computer Laboratory Schools Project (1993-1997), the Basic Education Project (1997-2007), the Secondary Education Project (2006-2010), and the FATİH Project (2010). Fırsatları Artırma ve Teknolojiyi İyileştirme Hareketi (FATİH) -The Movement to Enhance Opportunities and Improve Technology- Project was launched in 2010 by the Ministry of National Education to ensure equal opportunities in education, create an information society, and improve the quality of information technology in the country by making information technologies (IT) beneficial in education (Dursun, Kırbaş and Yüksel, 2015). In a similar vein, in Türkiye the presence of digital transformation in education is recognized, with various initiatives such as the “FATİH Project,” EBA applications, and the “Digital Transformation Project in Universities” being implemented at the K12 level (MEB, 2020a; Şener and Gündüzalp, 2018 as cited in Kocaman-Karoğlu, Bal-Çetinkaya and Çimşir, 2020). In addition, outside of school, the support for digital transformation in education includes government-supported initiatives like Deneyap Technology Workshops, Design-Skill Workshops, the “81 Cyber Heroes in 81 Provinces” projects, and the globally significant technology festival, TEKNOFEST, which involves numerous public and private sector institutions (Kocaman-Karoğlu, Bal-Çetinkaya and Çimşir, 2020). Another sub-project of the FATİH project, the Education Informatics Network (EBA), is perhaps its most important and vital component, as it is a social platform designed by the General Directorate of Innovation and Educational Technologies to utilize effective materials through information technologies in the educational process (Eryılmaz and Uluyol, 2015).

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century skills such as complex problem solving, critical thinking, innovation, effective communication, cultural respect, high-level cooperation, and international competitiveness, while also preserving their national identity and awareness, which has prompted a reevaluation of the role and qualities required of teachers in society (Directorate General for Teacher Training and Development, 2017).

In 2018, the Ministry of National Education of Türkiye identified eight key competencies in the Turkish Qualifications Framework. Digital competence, one of these eight competencies, aimed at the safe and critical use of ICTs for work, communication, and everyday purposes. These eight competencies include the following: “1-Communication in mother language, 2-Communication in foreign languages, 3-Mathematical competence and basic competencies in science/technology, 4-Digital competence, 5-Learning to learn, 6-Social and civic competencies, 7-Sense of initiative and entrepreneurship, 8-Cultural awareness and expression” (MEB, 2018, pp. 4-5).

Recently, The European Council also support several candidate countries, including Türkiye, through the Instrument for Pre-Accession Assistance (IPA), with the aim of improving access to digital technologies and fostering digital skills in these countries (Regulation of the European Parliament and of the Council, 2021). As a consequence, the Turkish MoNE continues to prioritize the development of digital competence in educational settings through various innovative projects and initiatives, ensuring that students and educators are well-equipped for the digital age.

2.3. Digital competence studies in ELT

There has been a plethora of research into the digital competence of various actors in education. Based on a thorough review of existing studies in the scope of digital competence in teaching English as a foreign language, it might be concluded that the studies can be examined according to the target groups of the research. According to the existing research, most of the studies were conducted with in-service and pre-service teachers because of their active role in educating learners. The number of studies recruiting learners as participants in research was fewer. Surprisingly, the least number of studies belonged to those that examined the digital competence of both teachers and learners. It is possible to draw the conclusion that investigating two groups requires more time and

commitment, as most of these studies examining both groups employed a case study and had a more longitudinal nature in terms of research. Regarding this, the studies concentrating on digital competence in EFL teaching are presented according to the target groups in this section.

2.3.1. Studies with pre-service language teachers

The vast majority of research that include pre-service teachers as participants are concerned with their perceived and actual level of digital competence, enthusiasm, and preparedness to utilize digital tools in their future teaching. The other factors examined in the studies involve age, gender, field of study, and the relation between linguistic skills and digital competence. In addition, some of the research looked into the impacts of the pandemic as it led the teaching process to turn into a novel fashion in which learners and teachers were obliged to accord with the technological tools in education.

Lei (2009) measured the perceptions, readiness, and interest of pre-service teachers by assuming that they are ‘digital natives’. The data collected through an online survey revealed that, though pre-service teachers seemed to held positive beliefs about utilizing digital tools in the classroom, their knowledge about those tools was actually limited to social networking applications. They did not know how to integrate educational digital tools and were required to be trained to augment their practical knowledge and provided with hands-on experiences prior to their future classroom practice. The results suggest that preservice teachers who used technology growing up are skilled in both foundational and social-communication technologies. Yet, their technological proficiency is constrained by the narrow focus and shallow depth of their technological activity. In addition to teaching advanced, classroom, and assistive technologies, systematic technology preparation is essential to help students connect technology with teaching and transition from being digital native students to digital native teachers.

Lei (2009) noted that in some schools, tech-savvy students support their professors’ use of technology, encourage their teachers to do so, and even take on the role of technology instructors for their teachers. However, being able to utilize technology does not always imply doing so critically, prudently, or meaningfully.

Another study concentrating on perceptions and digital competence of pre-service teachers was conducted by Engen et al. (2014). They carried out a quantitative study in a Norwegian context where ICT skills were included in the five basic skills with the 2006 curriculum reform. Freshman pre-service teachers were recruited as participants. The participants filled out an online questionnaire to outline their perceived and actual digital competence. Though most of the participants expressed that they were able to use social networking and search for information, they seemed to spend less time on activities that require complicated skills or knowledge. At this juncture, they propose that there seems to be a discrepancy between their actual levels of technology efficiency and their perceived levels of expertise. Overall, this study demonstrated that the technology skills and usage of young people are less extensive than anticipated.

Maiier and Koval (2021) conducted a mixed method research to find out whether pre-service teachers are prepared to use digital resources for foreign language instruction, as well as what they think about how to improve their digital competence. First, 56 participants were split into two experimental groups, one of which had teachers routinely check in with them and utilized checklists to evaluate their digital competencies, and the other of which had only teachers check in. Pre-test and pos-test were applied to gauge the distinction between two experimental group at the end of the process. The results of the pre-test showed that the levels of digital competency in both experimental groups were nearly equal before the experiment began. Following the experimental learning, the first experimental group's pre-service teachers' digital skills greatly outgrew those of the second experimental group. It was found that the success of the learning process is influenced by the teacher's professional competence, which includes digital competence. The findings of the study demonstrate that respondents can utilize digital technology to organize foreign language learning in various ways: individually (45%), in pairs (10%), in small groups (15%), and with the entire class (30%).

Similarly, in a case study conducted by Ng (2012), numerous web-based technologies such as Mahara, Prezi, VoiceThread etc. were introduced to the pre-service teachers during the project and they were supposed to fulfill some tasks on these tools later. Pre-test and post-test were administered in an attempt to compare their level of digital literacy. The study uncovered that the bulk of the participants accomplished the tasks on their own though they encountered some difficulties, and only one of them asked for help of the tutor. As for the results of pre- and post-tests, the rates varied significantly. Whereas students stated

they were familiar with some of the digital technologies, they had never used them for educational purposes before. As a consequence, the students reported that their digital literacy level increased thanks to this training and felt more confident in utilizing the tools.

In another case study conducted by Røkenes and Krumsvik (2016), it was aimed to ascertain how well pre-service teachers were prepared to integrate ICT into their English language process and what their perceptions of digital competence were like. The study was carried out for four academic semesters by applying surveys, classroom observations, and semi-structured interviews. The findings demonstrated that pre-service teachers demanded to be equipped with the knowledge of integrating digital tools in innovative ways and using them in authentic contexts for improving foreign language learning. Although pre-service teachers stated that they did not model either their teacher educators or mentor teachers, they were observed to make use of ICT tools during their school practicum in the same way their educators and mentors did in the classes. Overall, it highlights the significance of hands-on experiences that enable pre-service teachers to be able to use ICT tools in a pedagogical manner.

Korucu, Yücel, Gündoğdu and Gençtürk (2015) investigated the digital competence of pre-service teachers from different departments at a state university in relation to various factors such as gender, branch of study, and level of mobile device use. They revealed that gender and educational departments of the participants were not as influential as the level of mobile device usage. On the other hand, the degree of accessing mobile device or the Internet affected the digital competence of the participants significantly.

In a similar vein, García-Martín and García-Sánchez (2017) attempted to gauge the digital literacy levels of pre-service teachers according to their gender, and field of study. Regarding the first variable, gender, it was concluded that female pre-service teachers tended to be more familiar with digital tools for personal use, and they required training in the use of them for pedagogical purposes, whereas male pre-service teachers stated being more knowledgeable about the use of Web 2.0 tools and being well-trained to utilize them in education. Concerning the field of teaching, Geography, and History teachers stated being competent in the functions and usage of tools, and Language and Literature teachers appeared to be the most enthusiastic to learn and produce web-based content.

Çalışkan, Güney, Sakhieva, Vasbieva, and Zaitseva (2019) also sought to examine the perceptions of pre-service teachers from various departments on the usability of Web 2.0

tools in a classroom environment. The findings of their study demonstrated that pre-service teachers held positive attitudes about the use of Web 2.0 tools in education, as they believe that these tools encourage pupils to actively participate in content creation, furthermore, they promote social interaction and creativity according to their beliefs.

Guillén-Gámez, Lugones and Mayorga-Fernández (2019) carried out a non-experimental research to ascertain how pre-service teachers in the Department of Foreign Languages use digital technologies in the classroom and whether age, gender, or motivation have an impact on how they are used. Digital competence of the participants was determined through a test, whereas the personal and academic information about them was collected through a questionnaire. It was determined that pedagogical digital competence of the pre-service teachers fell below the expected level. Age was thought to have a considerable impact on how digital technologies are used to deliver courses. In addition, motivation was regarded as a key component in the level of development of pedagogical digital competence. Yet, because the participating student-teachers' viewed of using digital tools in teaching and their actual teaching practice diverge significantly, it was discovered that their usage of them was restricted. Also, the component that had the biggest influence on the growth of pedagogical digital competence was motivation.

Uçar and Yazıcı (2021) carried out a research in which pre-service EFL teachers and ELL students were recruited as participants with the aim of revealing their tendencies towards using Web 2.0 tools for academic purposes. The findings presented that students in both departments held positive attitudes towards using digital technology in their learning process and applied them not only to improve their receptive skills like enhancing vocabulary, reading but also to improve their productive skills such as speaking and writing.

Through a training project with pre-service teachers, Ahern and López-Medina (2021) revealed that integration of digital tools accelerates the communicative skills of them. Further, pre-service teachers were provided with hands-on experiences through this project as they were required to design classes according to the needs of learners, coordinate with their peers, and ask for guidance when needed. As a result, this project enabled them to grow their professional development in addition to digital competence and related competence areas for teaching.

Regarding the impacts of the pandemic in education, numerous studies were conducted. Karakuş and Kılıç (2022) have conducted a research examining the relationship among the digital competencies, fluency and awareness of pre-service teachers in Turkish context. They have concluded that pre-service teachers hold positive attitudes towards using digital tools in teaching process and they regard pre-service teachers as the borns in the digital era. Furthermore, they assert that COVID-19 Pandemic has caused educators all around the world to be obliged to equip themselves with digital skills as they have used digital tools actively during that remote learning period.

In a similar vein, Iskandar, et. al. (2022) suggest the idea that digital literacy will be probably one of the most underpinning component of education in a few years due to and after the COVID-19 pandemic. In this regard, they assert the following assertion: Incorporating digital literacy into education is no longer optional. The two-year COVID-19 pandemic has left us with no choice but to extensively utilize ICT technology to drive the educational process — facilitating teaching and learning.

They assert that digital literacy should be taught as a cross-curricular competency in English courses to give students plenty of possibilities to develop more authentic and digital English outcomes and practices. The findings of this study illustrates that digital literacy is neglected in EFL classrooms are justified by the fact that digital technology is only employed for pedagogical purposes.

The study by Geçkin (2022) focused on finding how COVID-19 lockdown affected pre-service teachers' linguistic competencies and their digital competencies. Geçkin (2022) compared the correlation between before and after the pandemic regarding the participants' linguistic, grammatical, communicative and sociolinguistic competencies and their self-perceptions. Aforementioned study revealed that pre-service teachers evaluated their own competencies after pandemic.

2.3.2. Studies with in-service language teachers

A great deal of research was conducted regarding digital competence of teachers. The key points of these studies were perceptions, actual level of digital competence, their ICT knowledge and practice, and challenges encountered during remote teaching as a result of the pandemic in general. The other variables sought in research included age, years of experience, gender, field of teaching.

One of the studies involved both pre-service and in-service teachers as participants. Luo, Lee, Muljana and Shah (2022) sought to find out the perceptions of pre-service and in-service teachers about integration of Web 2.0 tools in literacy classes. All the participating teachers reported to be in favor of using these tools in education and being aware of their aid in supporting learning process and making it enjoyable. It was thought that vocabulary and word recognition were the content areas most amenable to Web 2.0 integration. In this study, those who considered themselves to be highly capable of using Web 2.0 did it more for personal uses than for instructional purposes. As for the variable of age of the participants, the likelihood that teachers will employ Web 2.0 tools in their literacy classes increases as they get younger since they are more likely to see them favorably. They are more inclined to integrate Web 2.0 tools into their training the more at ease they feel.

Similarly, Pinho and Lima (2013) conducted a case study for a four-week period in a Brazilian context by employing a training course for pre-service and in-service teachers whose educational backgrounds and workplaces varied. The course was held online for three weeks, and the final session was held face-to-face. Initially, a questionnaire was administered to the participants to gauge their knowledge and perceptions about digital technologies. A Web 2.0 tool called Movie Maker was introduced to them, and they were supposed to utilize it to prepare videos to foster foreign language learning by working collaboratively with the other participants, and then they were required to upload their works to YouTube. This study illustrated that using such a digital tool in foreign language teaching enabled teachers to create their own content, to reflect upon their knowledge and skills regarding technology usage, and to participate actively in the educational setting. Furthermore, teachers reported that by working on understanding and oral and written production, this tool may promote FL communication and motivate language learners by offering real-world contexts for deep learning. It was concluded that the work of creating digital content aided when cultivating digital fluency, made it possible to utilize Windows

Movie Maker effectively after learning about its resources, and consequently improved the preparation of contemporary foreign language instructors. By presenting students with the difficulty of making a decision prior to readings and debates regarding the innovative use of media, it encouraged independence and creativity in FL education as well. It improved cooperation by making teamwork benefits more apparent.

Benali et al. (2018) conducted a case study in a Moroccan context in order to look into English language teachers' views on their digital proficiency, gender, confidence in digital teaching, and teaching experience. In this regard, a questionnaire based on DigCompEdu was administered to 160 teachers. According to the results, more than half of the participants (55%) declared their confidence in using digital tools in class. As for gender variable, though they were not represented equally in the study (male participants outnumbered female counterparts), there was no discernible difference between male and female participants with regard to their digital competence. However, this study outlined that teachers' digital competence increased with years of teaching experience.

A cross-cultural study was employed in various countries Europe, Latin America, and the Caribbean to assess how teachers perceive the core components of new digital technologies (Tomczyk, Jáuregui, Amato, Muñoz, Arteaga, Oyelere, Akyar and Porta, 2021). The study made use of a tool that was tailored to the cultural preferences of each pertinent country. 897 teachers from eight different nations completed the questionnaire, which included questions about the use of technological advances in education, encounters of teachers with online instruction, and their own assessments of their digital competence. The study's findings displayed that the vast majority of the participants held favorable opinions regarding integration of technology in the classroom. Nonetheless, some Finnish and Polish teachers seemed hesitant about the use of websites for education. The study is important in highlighting the differences in perceptions or practice between before and after the pandemic, according to the researchers, who point out that when the data was collected, the Covid-19 pandemic had not yet broken out in some countries, particularly in Europe and Latin America.

Similarly, Laeli, Setiawan and Anam (2020) conducted a case study that aimed to comprehend the perceptions and practices of English language teachers about reading digital texts in an Indonesian context. A total of 23 English teachers from senior and junior high schools took part in the study. Participants were attending in a training course hosted by the Indonesian Ministry of Education when this study was being conducted. As Covid-

19 pandemic broke out, the data was collected online. It was discovered that every teacher seems to have positive attitudes about the practice of digital reading. However, when it comes to the teachers' understanding of reading digital texts, they give the impression that they only consider it a tool for reading online. Also, they stated that they did not use it in their classes, leading to the conclusion that their ignorance of the technology pedagogical content may prevent them from applying it correctly.

Kožuh et al. (2021) carried out a descriptive research in an attempt to identify whether primary and secondary school teachers in a Serbian context utilize digital tools in their classes, for evaluating their students, whether they are qualified to use them, and whether they have the knowledge to create and search for digital contents. The results were discussed according to four factors influencing digital competence of teachers: what courses they teach, the number of years they have taught, their gender, and their educational background. The study's findings indicate that science and technology teachers are commonly using digital tools and technological products in teaching, whereas teachers in the field of social studies seem to be less digitally competent in integrating those tools into their classes. Contrary to the common assumption that younger generation is more acquainted with digital tools, teachers having more than ten years of experience stated to use digital tools when evaluating students more frequently than the less experienced teachers. In terms of the gender of the participants, male teachers were found to use digital tools for evaluating students more frequently than female teachers. As for professional development, teachers are eager to stay up to date on technology and are prepared to attend seminars, workshops and courses in order to improve their digital competence.

In the same vein, Keskin and Yazar (2015) investigated the digital competence of teachers in an eastern province in Türkiye in order to determine to what degree such factors as gender, level of education, branch, and computer courses they took have an impact on their digital competence. This study revealed that male teachers stated to be more qualified than female teachers. In terms of education level, usage of digital technologies in education increased as teachers pursued further education. As for branch of the teachers, teachers of Information Technology, Science, Maths, and English had the highest digital competence levels. Lastly, the digital competency of instructors was significantly impacted by prior computer course completion.

Regarding teachers as the primary actors introducing digital skills to schools and learners, Al Khateeb (2017) examined the digital competency of in-service teachers of English

language in a Saudi Arabian context. According to the quantitative data obtained from the survey, the majority of teachers were determined to possess basic level of digital competency. Surprisingly, most of the teachers reported to be advanced in using social networking sites, however, they were found to be less adept at using online banking or digital tools in education. As a consequence, the teachers in this study turned out to be less digitally savvy than was expected of them. Teachers should be encouraged to gain additional digital literacy skills as a component of their ongoing professional growth.

Fostering students' digital competency is closely linked to the usage of Web 2.0 technologies in the classroom according to a vast body of the literature (Başal, 2016; Cephe and Balçıkanlı, 2012; Elmas and Geban, 2012; Kayar, 2019). For this reason, the studies shedding light on the the use of aforementioned technologies were reviewed in this study as well. Marković, Koch and Frančić (2012) attempted to find out to what extent teachers utilized Web 2.0 tools in education. The study was conducted in the Republic of Croatia, and the participants varied in their age, workplace and years of teaching experience. Most of the teachers reported to use these tools in delivering their content of teaching several times a week whereas the ones who did not make use of them cited a lack of digital competence, inadequate equipment in their classrooms, and a lack of enthusiasm as their reasons.

A threefold training project for English language teachers was implemented. First, teachers became acquainted with various Web 2.0 tools through an adapted unit from an English coursebook. Then, they were supposed to design a curriculum and plan a lesson integrating technology, and they were observed by the researcher in that phase. As for the final phase, the researcher gathered data through stimulated-recall interviews with the participants. Lim (2016) proposes that language teachers demand training in how and why English language teachers incorporate subject matter, instructional techniques, and technological advancements suitable for their particular ecological, social, and cultural classroom environment.

Mahapatra (2015) carried out a case study with ESL teachers from various countries including India, Iran, Dubai and Italy for four weeks. It was revealed that though the participants showed great interest in learning Web 2.0 tools for their professional development and using them for educational purposes, not all of the teachers were able to learn them on their own but they needed guidance about the utilization of them. Though the participants had a four-week duration to learn the tools, they required far more time

than was allotted to them to use these tools with their own pupils. However, they stated that they were not pleased with the duration of the in-service training program, and that they would prefer to have one task per week rather than four.

To learn more about the educational advantages and difficulties of such tools, Light (2010) conducted qualitative research over a two-year period with a sample of teachers who were experimenting with Web 2.0 tools in their classrooms. Though the study did not demonstrate decisive results, it was crucial in terms of demonstrating the process of using digital tools in a learning environment. Even though this study found these tools to have a lot of potential, it also indicated that careful preparation was needed to match instructional activities with these tools' capabilities. Teachers needed to create activities where the communication made possible by Web 2.0 tools was significant and relevant to either the content that students were learning or to their own lives.

In a similar vein, Kayar (2019) conducted a mixed-method study to investigate the perceptions of foreign language teachers about Web 2.0 tools in a Turkish context and to reveal the pros and cons of these tools in the teaching process. The study's findings demonstrated that foreign language teachers in high schools actively made use of various tools in teaching. Further, it was indicated that use of those tools contributed to development of the students with regard to aspects such as engagement, enthusiasm, and participation. On the other hand, using those tools led to some problems regarding technical issues and managing the classroom.

According to the results of the survey conducted by Coutinho and Bottentuit Junior (2008), educators in universities tended to utilize Web 2.0 tools more for personal reasons than pedagogical purposes. Though the participants were conscious of the educational potential of those tools, they seemed reluctant to use them in practice. The most prevalent justifications for using Web 2.0 tools in education in this study are to encourage information sharing, acquire knowledge for a globalized world, and foster cooperative learning.

In another study conducted by Konstantinidis, Theodosiadou, and Pappos (2013), four Web 2.0 tools that are user-friendly even for those who are not technologically adept were introduced. In a blended learning course for a group of twenty-four instructors, the tools made up the curriculum. As a consequence, the four tools were highly regarded by all

participants, and they could all utilize them with just a little bit of written step-by-step guidance.

2.3.3. Studies with language learners

Few studies have investigated the digital competence of learners. In terms of the breadth of their search, it is conceivable to split the research recruiting students as participants into two categories. One of the main factors studied was how the learning environment influences the learning process of learners, and the other was for what purposes learners make use of digital learners in and/or outside the learning environment.

As the first category examined the learning environment, most of the studies were carried out as case studies. In this respect, Popescu and Cioui (2011) employed an experimental study with 45 students with the aim of building a social learning environment called eMUSE that was integrated with Web 2.0 tools. Their study uncovered that most of the students felt motivated and fortunate to participate in such a process and they stated that they had the opportunity to monitor their own improvement and to compare themselves with their peers.

Regarding the implementation of digital tools into EFL classroom, Rahmawanti and Umam (2019) carried out an action research project where university students were required to perform specific writing tasks with pseudonyms on Padlet. Pseudonyms allowed students to write confidently as they were not afraid of making mistakes on their own work. The study's findings demonstrated that ICT could be included into EFL classrooms to aid in learning assessment. Web 2.0 tools, like Padlet in this example, may be used to support evaluation for learning by taking into account different factors that allowed the students to evaluate and learn from their works securely.

In her study, Girgin (2010) designed an online classroom setting for the students at a private school in Turkey where they carried out specific tasks to enhance their language proficiency. According to the linked study's findings, the students are eager to integrate their digital competence into language learning process based on the questionnaire and the tasks they have completed during the study. She proposes that the use of digital tools enhance learners' motivation as they offer the learners opportunities to build their own settings, to express their preferences and monitor themselves while and after carrying out

the tasks. Furthermore, online classroom settings are regarded as an environment where learners have chance to gain autonomy individually and to assess not only their own learning process but also their peers since they are able to see what the others are carrying out to complete the tasks.

In a similar vein, Sazalli (2014) employed a training research project with English as a Second Language learners, and participants were expected to work collaboratively with their peers to accomplish certain tasks in this study by using social media platforms and Web 2.0 tools during the training course. Overall, the study illustrated that mobile devices and technological gadgets could be effective in language learning. Additionally, those tools enabled learners to maintain the tasks collaboratively and enthusiastically.

Similarly, Rahimi, Berg and Veen (2014) put an emphasis on the students own activity in technology-based learning as the students have affordance in monitoring their learning process and regulating themselves, they can become autonomous learners. Teachers may gain insights into the methods of teaching and learning through their students' use of web 2.0 tools in conjunction with one another.

Pascual (2019) also implemented a case study to propose a teaching approach that should be used to strengthen students' digital and communicative skills in secondary level EFL classes through a computer-mediated genre such as the travel blog. Initially, a collection of travel blogs was assembled, and the main linguistic and rhetorical characteristics of the blogs were determined. Then, various lesson plans were created based on the corpus-based findings as well as the ideas of task-based learning and communicative language instruction. To that end, 13 and 14-year-old learners engaged in some reading and writing tasks on digital travel blogs for three weeks. This study concludes that using digital tools, learners could advance from receptive to productive skills. Additionally, it asserts that teachers can assist students in fostering their linguistic and technological skills by selecting the right genre to cover in earlier classes.

The purposes of using digital technologies in the classroom were another aspect that research looked into. To this end, several studies were conducted with learners. Muharom, Nugroho and Putra (2022) have conducted a research in an EFL setting to examine whether and for what purposes English learners use digital tools outside the classroom. They have revealed that learners mostly use digital devices for receptive skills in an attempt to expand their lexical knowledge and to be exposed to more authentic input like videos, songs. In

line with the findings of the study, they propose the idea that foreign language teachers had better help learners stimulated in using digital tools as they augment the exposure to the language input both inside and outside the classroom.

A research conducted by Lee and Lee (2021) in South Korea seeks to scrutinize how casual digital English learning affects students' motivation and joy to learn it. 661 students from different school grades ranging from secondary school to high school participated into the research. Based on the data analysis obtained through a questionnaire, university students scored the highest L2 self than the others. Further, it was found that L2 self and casual digital learning of English predict foreign language enjoyment of all the groups in the study. All in all, they assert that this way of learning including the activities like watching YouTube videos, speaking foreigners on the social media seem to facilitate learners language learning. These findings underpin the importance of integration of digital tools into teaching and learning as they contribute crucially and favorably to the process.

Virkus and Bamigbola (2011) have also uncovered for what purposes students use Web 2.0 tools, and the purposes varied in communicational, educational, and professional manners. The study has also revealed that no matter how many Web 2.0 tools there are, the students tend to use their preferred ones for certain purposes.

A study by Eze (2016) aiming to identify the awareness of students using Web 2.0 tools was carried out in the Nigerian context as well. According to the data obtained from this study, students were likely to use Web 2.0 tools more for fun or social reasons than academic purposes.

To sum up, Web 2.0 techniques are found to be useful tools for fostering students' creativity and independent use of the second language, according to the results of the study by Sariçoban and Kurum (2011). Also, English teachers can collaborate globally with their peers to discuss ideas and successful initiatives. Web 2.0 enables students to use English outside of the classroom, which is crucial for students learning English as a second language in particular because foreign language learners typically lack the opportunity to practice their language outside of the classroom, in contrast to second language learners.

2.3.4. Studies with both language learners and teachers

The number of research which involve both learners and teachers is extremely small. Del-Moral-Pérez, Villalustre-Martínez, and Neira-Piñeiro (2019) conducted a case study in a Spanish context with primary education learners and their teachers to examine their perceptions about digital narrative and gauge its effect on the communicative and digital competence of the children. The study in which 201 primary school students were required to collaborate with their teachers to develop a digital story using any digital technology was fulfilled in seven months. Previously, participating teachers were trained about the digital tools by the researcher. Even though girls made slightly more progress than boys in the study, those learners with higher levels showed more growth in both linguistic and digital competence, as a result there was no discernible gender bias. All of the students developed an enthusiasm in utilizing digital tools to generate material, and digital competence was found to be a motivating element of learning.

Another study was conducted at tertiary level in Ukrainian context with the participation of 193 teachers and students. When comparing the level of digital competence of both groups, students seemed to have higher level of competency of IT usage than teachers. However, teachers were more likely to use digital tools while performing educational tasks.

As the pandemic made education adopt an online teaching fashion, Fauzi (2021) employed a case study that attempted to figure out perceptions, motivation, attitude of students towards online learning. Following the data analysis, perceptions, attitudes, motivation of students and learning outcomes were found to be significantly correlated. The Covid-19 pandemic may be a godsend for educators who want to improve their digital literacy so they can use online learning for their pupils. The program that is the easiest and most user-friendly to deploy should be chosen by those who lack the ability to operate web gadgets.

In their study, Fadini and Finardi (2015) suggested that integrating digital tools into L2 learning and teaching process had a positive effect thanks to the opportunities they provide the learners in collaboration and creating their own content. In addition, they highlighted the importance of efficacy and attitudes of teachers in inclusion of digital tools in teaching process.

2.4. Historical background of teachers' self-efficacy

Studies on teachers' beliefs initially emerged in the 1970s to examine the teacher-related factors that influence students' success in an underrepresented community setting in the USA. Though the data gathered by RAND (Research and Development Corporation) researchers did not present any evidence about the possibility of increasing teachers' beliefs through training, they concluded that boosting the motivation and dedication of teachers might help them deal with problems in the class (Armor, Conroy-Oseguera, Cox, King, McDonell, Pascal, Pauly, and Zellman, 1976). However, this study did not thoroughly cover the concept of self-efficacy on its own to introduce it to the literature.

After Rotter's ground-breaking theory on the construct of locus of control, Bandura's social cognitive theory and the idea of self-efficacy, which were first introduced in 1997, gave rise to a second line of research that developed alongside the first. Efficacy expectancies and outcome expectancies are the two categories of expectations that social cognitive theory presents. While outcome expectancies entail an individual's assessment of the likely effects of doing a task at their anticipated level of competence, efficacy expectations relate to an individual's conviction in their ability to carry out the essential activities for that task. In terms of behavior prediction, Bandura (1997) distinguishes between self-efficacy and Rotter's internal-external locus of control, which focuses more on beliefs regarding the causal relationship between behaviours and consequences than on personal efficacy (as cited in Tschannen-Moran et al., 1998). In addition, the root of the idea of self-efficacy lies in the social cognitive theory put forth by the American psychologist, Albert Bandura (as cited in Lopez-Garrido, 2023). As a result, Bandura is considered the pioneer in field of self-efficacy.

2.4.1. Definitions and domains of self-efficacy

The concept of self-efficacy, extensively researched across various fields, particularly dominates in education; however, many people have misused and misunderstood its power and significance in predicting actions (Chesnut and Burley, 2015). Keeping its cruciality in education in mind, this current study clarifies its impact specifically on EFL teachers' digital competency. Regarding this point, Kaygısız, Anagun and Karahan (2018) assert that it is crucial to look into English teachers' efficacies, the language teaching methods they employ, and how these factors interact to increase the standard of English instruction and reach the intended level.

A comprehensive definition of self-efficacy as confidence in one's abilities in a particular field is provided by Hickson (2016). In their seminal work covering all sources between 1974 and 1997, Tshannen-Moran et al. (1998) come up with the definition of teacher efficacy as follows: The term 'teacher efficacy' describes a teacher's confidence in their capacity to effectively plan and execute the required steps to succeed in a specific teaching task within a given context. They put an emphasis on the situation of teaching since teachers' level of efficacy may vary depending on the circumstances they encounter. In other words, teacher efficacy, as a motivational concept, suggests that the extent of a teacher's belief in their abilities influences the effort they put forth in a classroom setting and their determination to persevere when encountering challenges.

Likewise the definition by Tschannen et al. (1998), Christopherson et al. (2016) put an emphasis on the context by defining teacher's self-efficacy as a teacher's confidence in their capacity of performing competently in a variety of situations and related disciplines. Tshannen-Moran and Johnson (2011) also pinpoint the significance of context as the environment where the efficacy sources are encountered has a vital impact on how teachers see their own efficacy.

Bandura (1993) outlines three elements that influence academic achievement. In this regard, learners' beliefs, teachers' beliefs, and faculties' beliefs contribute to school achievement. To Bandura (1993), the sorts of learning environments teachers design and the degree of academic progress their students make are both influenced by their own beliefs in their own ability to inspire and support learning. Bandura (1993) does not take cognitive processes apart from other psychological constructs. To him, efficacy is related

to how people conceive, feel, and motivate themselves. As a result, cognitive, motivational, affective, and selecting processes are all components of self-efficacy.

With respect to domains of self-efficacy, Chan (2008) acknowledges Bandura's cutting-edge research in 1997, stating that self-efficacy beliefs are influenced by four main sources: active proficiency knowledge, virtual knowledge, persuasive communication, and biological and emotional conditions. Notably, active proficiency knowledge emerges as the most influential source, since it offers genuine proof of an instructor's effectiveness in specific situations. However, each source in Bandura's model is considered both a contributor and an influencer factor for one another (Tschannen-Moran et al., 1998).

Chan (2008) also provides a comprehensive classification of self-efficacy by delineating six domains, which encompass the following areas: educating highly capable students, managing the classroom, guiding and consulting, educating for cultural inclusion, pupil participation, and educating for enhanced learning.

Regarding the domains in the model offered by Tschannen-Moran et al. (1998), it reveals two factors in teacher efficacy measures: the first factor involves evaluating the challenges and constraints faced during teaching, balanced against available resources for facilitating learning, while the second factor involves assessing personal teaching competence by weighing strengths like abilities, knowledge, techniques, and dispositions against their liabilities or shortcomings in the specific teaching environment. Additionally, the authors provide a combined theory of teacher efficacy that combines both stated conceptual threads while also outlining potential new research directions to resolve conceptual ambiguity and draw from previous research (see Figure 4 below).

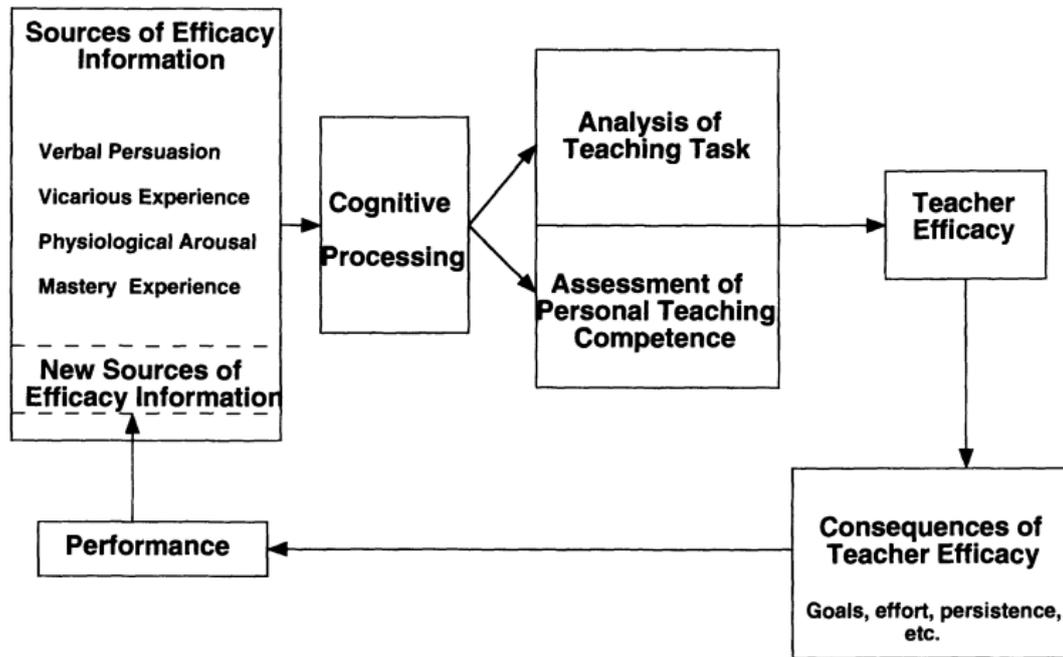


Figure 4. The recurrent pattern of teacher efficacy (Tschannen-Moran et al., 1998, p. 228)

To Tschannen-Moral et al. (1998), the cyclical nature of teacher efficacy above is a key aspect of its power, where improved performance creates new mastery experiences, shaping future beliefs in efficacy, leading to increased dedication and perseverance, resulting in superior results, and ultimately reinforcing greater efficacy.

2.4.2. Scales developed to gauge self-efficacy

Since self-efficacy started to be considered as a key determiner of achievement in education, various scales have been developed to gauge efficacy of teachers. Being a prominent name in the field of self-efficacy, Bandura is the pioneer in designing a scale for measuring teacher efficacy. Introducing his Teacher Self-efficacy Scale in 1997, Bandura emphasized that sense of efficacy of teachers can vary depending on the diverse tasks they are expected to undertake and the subjects they teach. To address this, he developed a comprehensive 30-item tool comprising seven sections, including efficacy in influencing deciding, school resources, instructional practices, discipline, participation of parents, civic engagement, and fostering a supportive school environment (Tschannen-Moran et al., 1998).

There are also a few valid and reliable scales in the literature. In 2008, Chan created the Teacher Self-Efficacy Scale (TSES-18) comprising 18 items. This scale was designed to evaluate the self-efficacy beliefs of Chinese teachers in Hong Kong. It specifically aimed to gauge the teachers' efficacy in six different domains of their functioning, aligning with six primary topics of education reform in Hong Kong.

One of the most influential works in the field was the development of a teacher self-efficacy scale by Gibson and Dembo in 1984. This scale comprised 30 items and was rated on a Likert scale from 1 to 6 (Tshannen-Moran et al., 1998). Subsequently, Hoy and Woolfolk (1993) adopted this scale and created a shorter version, focusing on items that had the highest factor loadings in the original scale by Gibson and Dembo. The scale adopted by Hoy and Woolfolk (1993) consisted of 10 items, addressing both personal teaching efficacy and general teaching efficacy. Considering the number and content of the items, and their coherence with the overall items in the questionnaire, the scale by Hoy and Woolfolk (1993) was found appropriate to utilize in the current study.

2.4.3. Studies on self-efficacy in the literature

When reviewing the literature, it stands out that the majority of research on teachers' efficacy centers around the concept itself. Several studies looked into the relation between efficacy, and digital competence or ICT usage of teachers. Only a limited number of studies delved into the impact of teacher efficacy on online teaching. Concerning this, it is possible to examine the studies on teacher efficacy in the literature in three sub-topics as studies on teachers' self-efficacy, studies examining the relation between teachers' efficacy and digital competence, and studies examining the impact of teacher efficacy on online teaching in this subheading.

2.4.3.1. Studies on teacher efficacy

Christophersen et al. (2016) revealed that programs for teacher preparation offer settings where student instructors can hone their instructional techniques in the empirical study

they conducted in a Norwegian context. The findings of the study can be summarized as follows: Firstly, problem behavior in the classroom has an adverse impact on student teacher efficacy. Secondly, students' confidence in effectively integrating pedagogic knowledge and practice plays a crucial role in supporting their efficacy beliefs. Thirdly, the support and guidance provided by supervisors positively influence student teachers' efficacy beliefs. Lastly, it was observed that student teachers enrolled in university college programs for primary school teaching demonstrate better teacher efficacy levels in comparison to students in university programs for secondary school teaching.

Recruiting the same target group as participants, Chan, Maneewan and Koul (2021) conducted an experimental study with pre-service teachers of EFL to delve into the impact of cooperative and traditional learning on their content knowledge and self-efficacy in a Cambodian context. Pre-test and post-test results and self-efficacy scale applied to the participants reveal that pre-service teachers who experience cooperative learning in the experimental group score better in grammar and vocabulary tests, in addition, learning through cooperative tasks facilitate their self-efficacy levels.

A study by Tshannen-Moran and Johnson (2011) aimed to investigate the factors that influence literacy instruction self-efficacy beliefs and how those factors connect to general teaching self-efficacy. The researchers examined various aspects, such as pre-service and in-service training experiences, contextual elements in the classroom, overall teacher self-efficacy beliefs, and demographic factors. Beginning their careers with solid self-efficacy views, teachers are more inclined to build on the persistence and drive those beliefs encourage, which in turn fuels ongoing strong self-efficacy beliefs. Nonetheless, teachers who initially have poor self-efficacy are prone to act in ways that support their ideas, allowing them to hold onto them.

Wang, Fang and Elyas (2023) sought to ascertain the rapid shifts in Chinese primary school English instructors' pedagogical and epistemological perspectives as well as their sense of self-efficacy towards their roles in the workplace. They employed a continuing professional development programme with 42 English language teachers in Beijing. To this end, focus groups and teachers' reflective journals were utilized as data collection tools. Initially participating teachers felt reluctant to take part in the study due to their workload and private life issues; however, some of them realized the practicality of teaching materials in the programme especially after receiving positive feedbacks from their pupils. The results showed that most participants went through a difficult process that

included resistance, conflict, compromise, and ultimately acceptance. By the end of the program, most primary school English teachers saw enhancements in their professional beliefs and confidence levels, though these improvements did not follow a straightforward path. This was due to discrepancies between the objectives of the CPD program and the teachers' existing competencies and expectations, resulting in various gaps and inconsistencies.

The study by Chan (2008) looked at a sample of Chinese pre-service and in-service teachers in Hong Kong to determine the association between effective intelligence and teacher self-efficacy. He employed a self-efficacy scale including six domains designed by himself and a successful intelligence scale as data collection tools. In-service teachers demonstrated notably higher classroom management efficacy scores compared to pre-service teachers. The results show that teachers appeared most confident when instructing highly gifted students and when advising and counseling students. In contrast, they appeared least confident when motivating learners to appreciate education and when handling learner problems in the classroom.

Similarly, Çankaya (2018) conducted a survey-type research on the self-efficacy beliefs of pre-service and in-service teachers of English in a Turkish context. In this study, the self-efficacy beliefs of the participants were compared and some factors such as gender, degree, teaching level and years of experience were also investigated. As a result, there was not a notable distinction in efficacy levels between male and female participants. However, as the participants with doctorate degrees stated higher efficacy levels in contrast to the ones with bachelor's degrees, participants' educational background and professional growth may help to generate high levels of effectiveness. This could imply that a person's sense of efficacy belief is influenced by their academic work and professional development activities. This study surprisingly noted that higher than the average self-efficacy ratings were given by the participants with the least experience. This could mean that people with less experience (1-3 years) are more willing to exert themselves because they feel more driven and have higher levels of self-efficacy. As for the dimensions of self-efficacy looked at in this study, whereas in-service teachers reported to be the most efficacious about managing the classroom, pre-service teachers reported to be the most efficacious about instructional efficacy. In this vein, it is emphasized that the efficacy of classroom management increases with years of experience.

Given the importance of self-efficacy in the teaching of English, Kaygısız, Anagun, and Karahan (2018) sought to determine whether English teachers' beliefs about their own efficacy and the strategies they used to teach the language were related. To this end, two scales as instruments to measure self-efficacy and language methods teaching were administered to 367 English language teachers. According to findings, an English teacher's propensity to adopt communication-oriented teaching practices in the classroom would increase with the high level of self-efficacy s/he has.

In the study conducted by Girgin and Ilgaz (2022), the level of self-efficacy views of English teachers regarding the teaching of gifted students was evaluated, along with variations based on age, professional seniority, and gender. To meet this goal, a questionnaire was applied to 352 English language teachers in a Turkish setting. The findings revealed that self-efficacy levels of teachers increase in accordance with their age and professional seniority; however, there was no gender-biased distinction identified.

In order to develop a framework of direction for new or less successful teachers, Nazari, Zohoorian, and Faravani (2021) attempted to analyze the patterns of classroom management and teacher empowerment among effective English language teachers. Initially a questionnaire was employed to 546 English language teachers, then 70 of them were found to be successful based on the evaluation of this questionnaire. Additionally, 7 of them took part in the semi-structured interview. According to the results, self-efficacy was determined to be a crucial factor for success and empowerment.

2.4.3.2. Studies examining the relation between teacher efficacy and digital competence

Few studies have explored any link between self-efficacy of teachers and technology, despite a wealth of data on both topics (Hickson, 2016).

Gudmundsdottir and Hatlevik (2018) conducted a research in an attempt to describe the association between pre-service self efficacy of teachers and their professional digital competence levels. According to the results drawn from the study, approximately half of the participants had negative attitudes towards implementation of digital tools into class as they believed it might distract the students. Notwithstanding, this study demonstrated controversial results with the 80% of the participants holding positive attitudes towards the

use and integration of ICT. They assert that teachers are aware of both the strengths and deficits of it. As for the gender variable examined in this study, male respondents assert that they are more comfortable utilizing ICT than female respondents. Authors report that males are not always better ICT users, yet this is a common misconception. In a similar vein, this may suggest that women place higher demands on themselves than do men.

Hatlevik (2017) explored the relationship between teachers' self-efficacy, information assessment strategies, digital competence, and use of ICT through a cross-sectional study in a Norwegian context. An online survey was used to elicit self-reported answers of teachers, and a multiple-choice test was used to determine digital competence of teachers. 66.9% of the participants reported that they used ICT more than six hours a week to prepare classes. When it comes to self-efficacy, it was found to be predicted by self-efficacy in basic ICT skills. As a consequence, it was concluded that teachers' beliefs regarding their capacity to facilitate online collaborative activities for students are directly linked to that usage of ICT in the classroom. In addition, this study underpins the importance of teachers' ICT self-efficacy in terms of teaching practice and strategies for evaluating information.

In the same setting, Moltudal, Krumsvik, Jone, Eikeland, and Johnson (2019) conducted research to demonstrate the interconnection between classroom management, a component of self-efficacy, and digital competence. In their comprehensive research conducted in a Norwegian context, teachers and some stakeholders like school owners, school managers were also involved. Employing a mixed method research design, they used questionnaire, interviews, focus groups and observation as data collection tools. Overall, it revealed that teachers who are proficient with technology are more inclined to explain educational goals and set forth clear expectations for ICT use in various circumstances, while reluctant teachers tend to rely on rigid guidelines when using digital tools in class. As a result, this study pinpoints the overlapping association between digital competence and self-efficacy of teachers.

In the study carried out by Hickson (2016) in a South Georgian context, 64 secondary school teachers having various ethnic backgrounds and years of experience, fields and genders involved. Two scales were employed in order to seek whether there was any connection between self-efficacy of teachers and their use of technology in the classes. According to the findings, the ability of teachers to incorporate technology and their sense of efficacy were found to be unrelated. Additionally, the study's particular technology and

teacher self-efficacy did not show any statistically significant link. Thus, it came to the conclusion that there was no link between teacher self-efficacy and the capacity to integrate smartphones, the internet, text messaging, social media, and email.

Galindo-Domínguez and Bezanilla (2021) examined the relationship among self-efficacy, time management and digital competence of university students from education faculties in a Spanish context. Four types of scales were implemented to gauge digital competence, time management, digital competence, and stress. The findings revealed that while digital competence did not predict stress, it did predict time management and self-efficacy. The authors come to the conclusion that stress is a factor that, when it is at average levels, enables people with high time management skills and self-efficacy to do more. Moreover, they put forward that learning is not limited to teachers, but students may also be taught to have higher digital competence, better time management, and improved self efficacy due to dynamic structure of these constructs.

In a study carried out by Santi, Gorghiu, and Pribeanu (2020), the connection between teachers' self-efficacy and their use of mobile technology in education was examined. In this regard, a questionnaire was distributed to 125 secondary school teachers to obtain their responses. It came to light that teachers have quite high levels of self-efficacy beliefs regarding their use of technology for educational purposes; nevertheless, they believe that their access to it is limited by a number of external variables, such as resources, funding, equipment, etc.

2.4.3.3. Studies examining the impact of teacher efficacy on online teaching

An increasing amount of research is assessing the self-confidence of teachers and their adoption of technology in the classroom due to distance learning. In this regard, Prieto-Ballester, Revuelta-Domínguez and Pedrera-Rodríguez (2021) made a research on self-perceptions and digital competence of teachers working at secondary school in a Spanish context regarding the influence of Emergent Remote Teaching due to pandemic. Based on the research findings, teachers believe they are adept in both knowing and using of digital tools. This study also looked into the gender factor regarding digital competence and self-efficacy and it concluded that male teachers believe that they are more competent.

Kaygısız and Balçıkanlı (2021) also conducted a case study with pre-service teachers of English in a Turkish context. In this study, they address the concerns and pre-service teachers' self-efficacy regarding teaching English through one of the distance learning tools, EBA TV. To meet this goal, participants were asked to keep reflective journals after watching three lessons designed for primary and secondary school learners on the aforementioned platform. It concluded that concerns of pre-service teachers surpassed their apparent self-efficacy beliefs, and they seemed to be worried about distance learning especially in terms of pedagogical and context-specific variables, and parental involvement.

In an empirical study by Malykhin, Aristova, and Melikova (2021), pre-service teachers of English studying at a Ukrainian university were divided into experimental and control groups in an attempt to find out how blended learning, which was introduced into the professional preparation of students pursuing a BA in Teaching English as a Second Language, affected the growth of their overall self-efficacy. A few courses were taught to these groups through blended learning and face-to-face respectively, and level of self-efficacy of the participants was gauged before and after the experiment. Overall findings uncovered that the participants in the experimental group demonstrated significantly higher self-efficacy than the ones in the control group. According to the research, there is a significant and positive correlation between the introduction of blended learning into students' professional development while pursuing a BA in Teaching English as a Second Language and a rise in their general self-efficacy.

Similarly, Konuralp and Topping (2023) investigated the factors influencing online teaching in an Iranian state university. In this regard, through semi-structured interviews, eleven EFL instructors employed by the university took part in the research to uncover their self-efficacy and the benefits and drawbacks of online teaching. Based on the findings, no proof was provided by the teachers that these benefits improved their self-efficacy. Additionally, some of the challenges that teachers encountered during online teaching could be listed as external factors like financial issues and restricted career opportunities, and internal factors like inadequate training, a heavy workload, financial stress, and communication problems. Nevertheless, teachers reported numerous benefits making their teaching more comfortable.

Arpacı (2017) looked into the relation between student teachers' self-efficacy and their use of digital tools in learning. In his research, he compared prior knowledge of the

participants about digital tools and their performance after acknowledging relevant tools. He also examined attitudes of them and ease of use of the tools. This study indicated that student teachers contend that using tools in online education would be fruitful for their future teaching. Further, they believe that utilizing these tools would boost their productivity, raise their efficacy and help them perform better. As a result, this study suggests that self-efficacy is significantly impacted by perceived ease of use.

2.5. Teacher autonomy

In this section, how teacher autonomy emerged as a concept in the literature, domains of teacher autonomy, the relation of it to English language teaching, and studies on teacher autonomy are covered.

2.5.1. Learner autonomy as a starting point of research on teacher autonomy

Autonomy was first introduced as a learning-related concept in the literature (Cirocki, Anam and Retraningdyah, 2019; Little, 1991), and there has been a plethora of research on autonomy of learners in the literature (Dang,2012; Fotiadou, Angelaki and Mavroidi, 2017; Ghassemi, Rahmatian, Safa and Shairi, 2023). However, most of the studies concentrate on the value of learner autonomy especially in studying English as a second or foreign language (Cirocki et al., 2019; Malik, Kousar and Rana, 2021; Swatevacharkul and Boonma, 2020; Tabassam, Azhar and Islam, 2021). In Turkish context, various studies were conducted to explore the impact of learner autonomy in ELT (Balçıkanlı, 2010; Çakıcı, 2017; Gökgöz, 2008; Özer and Yükselir, 2021; Tarhan and Erözden, 2008). Nevertheless, the concept of learner autonomy seems to have attracted increasing attention from the researchers during and after the pandemic as vast literature seeks the relation between learner autonomy and online language learning (Afacan-Adanır and Gülbahar-Güven, 2023; Defiantya and Wilson, 2023; Mohamed Elshaiekh, Maher Khafaga Shehata, and Elsayy, 2021).

As Benson (2007) illustrates, the research on autonomy of teachers has its roots in seeking to foster autonomy of learners mostly. Smith and Erdoğan (2008) also highlight that the

research on learner autonomy has made a notable contribution to the field of teacher training by contending that teacher autonomy is generally included within language learner autonomy in the literature.

Some authors argue that learner autonomy could be fostered thanks to teacher autonomy. Regarding this issue, Little (1991) points out that autonomy of the learner grows critically depending on each decision made by teacher. In a similar vein, Nikolaeva, Zadorozhna, and Datskiv (2019) pinpoint the importance of developing autonomy of pre-service teachers since they will support the growth of autonomy of learners in return. The motivation of students may be increased by autonomous teachers (Kong, 2022).

Little (1995) views both learner autonomy and teacher autonomy as interconnected concepts by emphasizing personal effort and responsibility in learning and teaching process. To him, truly effective teachers have always exhibited autonomy, as they possess a strong feeling of individual responsibility for their teaching, engage in ongoing evaluation and analysis to maintain the highest level of affective and cognitive control over the teaching process, and fully leverage the freedom it grants.

2.5.2. Definitional terms and domains of teacher autonomy

The body of current research does not provide a single, explicit definition for the idea of teacher autonomy (Baradaran, 2016; Han, 2017; Yıldırım, 2017). Nevertheless, the common emphasis about this concept usually centers around freedom (Benson, 2006; 2007; Han, 2017; Khalil, 2018; Kong, 2022; Pearson and Moomaw, 2006; Yıldırım, 2017). To Han (2017), defining teacher autonomy in language learning and teaching is an immensely challenging task, considered by many as the most difficult question to address, leading to subjective responses, yet he defines teacher autonomy as the professional quality exhibited by language instructors, encompassing their independence from external influence, as well as their capability and willingness to pursue self-directed professional growth by drawing on the relevant literature. According to Benson (2007), personal autonomy is a key objective of education systems, aiming to cultivate individuals who can actively and critically engage in society.

Regarding the descriptions of teacher autonomy, some themes ranging from freedom, professional development, and job satisfaction, to maintenance in teaching emerge in the

literature as key points. For instance, Khalil (2018), conducting a comprehensible investigation of teacher autonomy within the Turkish context, perceives teacher autonomy as the promotion of teachers taking initiatives, exercising discretion to address students' needs, fostering collaboration within schools, engaging in making decisions, and assuming accountability for their professional growth. From a similar perspective, Yıldırım (2017) also highlights that teacher autonomy contributes to enthusiasm and satisfaction with their jobs, amplifies their efficacy, innovative thinking, and consciousness, and elevates their self-esteem. Pearson and Moomaw (2006) also conclude that teacher autonomy predicts work satisfaction and desire to teach.

On the other hand, some authors emphasize independence of teachers in shaping their teaching processes. In this regard, Little (1995) proposes that the curriculum that a teacher presents to her or his learners belongs to nobody but solely to the teacher; even if s/he attempts to adhere closely to a standardized program, s/he can only convey her or his inherently distinct interpretation of it. According to Pearson and Moomaw's (2006) point, meaning of teacher autonomy varies from one teacher to another depending on their perception of freedom. The authors reiterate their utterance by stating that some may perceive it as a means of avoiding oversight or supervision, while others may see it as an opportunity to foster collegial connections and achieve activities that go beyond the confines of the typical classroom.

Interestingly, certain perspectives seem to associate these views with each other. To Aoki (2002), teacher autonomy can be understood in two distinct ways: first, as the capacity of teachers to guide their learners towards autonomy, and second, as the freedom they possess to apply their professional expertise and judgment in determining what and how to teach in the most effective manner (Aoki, 2002, as cited in Benson, 2007, p. 741). Similarly, Yıldırım (2017) underlines the significance of autonomy in designing course by suggesting that teachers must alter their instruction, curriculum, and syllabus to take into account the specifics of each situation and each student's requirements and interests, which necessitates their independence. Additionally, autonomy gives teachers the flexibility to adapt their teaching methods to their unique students according to her point of view.

Some authors pinpoint the reason why teacher autonomy is required. According to Skaalvik and Skaalvik (2014), teachers seek an optimal level of autonomy to effectively and promptly handle unexpected situations. They assert that autonomy not only allows teachers to select teaching strategies but also holds them accountable for the methods used

and the outcomes. Therefore, autonomy may be seen by teachers with high mastery expectations as a chance to teach in accordance with their values and views and to experiment with different teaching strategies (Skaalvik and Skaalvik, 2014).

Moreover, a broad definition of teacher autonomy has been recently proposed by Kong (2022), characterizing an autonomous teacher as one who takes personal responsibility for their teaching by engaging in ongoing periodic reflection and methodological analysis, while also embracing the freedom to independently choose teaching materials, design the curriculum, and administer lessons, which is essential for teachers everywhere.

Additionally, Han (2017, p.136) has gathered the various definitions of teacher autonomy that have been put forth in the literature and presented them in a table format as shown below.

Reference	Definitions of TA	Description
Little (1995, p. 179)	<i>Capacity</i> for autonomous teaching	Genuinely successful teachers have always been autonomous in the sense of having a strong sense of personal responsibility for their teaching, exercising via continuous reflection and analysis the highest possible degree of affective and cognitive control of the teaching process, and exploiting the freedom that this confers.
McGrath (2000)	<i>Self-directed professional development</i> and <i>Freedom</i> (from control by others)	Teacher has control over his/her own professional development. A number of strands come together: the teacher as researcher, action research, the concept of reflective practitioner and teacher development.
Smith (2003, p. 4)	<i>professional action</i> and <i>professional development</i>	In relation to professional action, it includes the dimensions of "Self-directed professional action", "Capacity for self-directed professional action" and "Freedom from control over professional action". In relation to professional development, it includes the dimensions of "Self-directed professional development", "Capacity for self-directed professional development" and "Freedom from control over professional development".
Thavenius (1999, p. 160)	Teacher's <i>ability</i> and <i>willingness</i>	TA can be defined as teacher's ability and willingness to help learners take responsibility for their own learning. An autonomous teacher is a teacher who reflects on her teacher role and who can change it, who can help learners become autonomous, and who is independent enough to let her learners become independent.
Vieira (2008, p. 200)	teacher-as-learner autonomy and teacher-as-teacher autonomy	TA includes two parts according to the phases of development. In preservice teacher education, the (student) teacher learns how to teach as a learner of teaching, and inservice teacher teaches students how to learn as a teacher of learning.
Huang & Benson (2007, p. 35)	<i>Professional attribute</i>	The professional attribute, on one hand, involves the capacity of control over the teaching process. On the other hand, the professional attribute relates to the capacity for self-directed professional development.
Xu (2007, p. 202)	<i>Action</i> for autonomous teaching and <i>Capacity</i> for self-directed professional development	TA includes: teacher's freedom from control in the teaching process, and as language learners, teacher should have the capacity of autonomous learning.

Figure 5. Definitions of teacher autonomy assembled by Han (2017, p. 136)

Han (2017) concludes that teacher autonomy is characterized by three key aspects after compiling different perspectives on teacher autonomy comprehensively. First, it involves language teachers' freedom and willingness to engage in autonomous teaching, necessitating an active, vital, and analytical approach to their instruction, being responsible for the learning process while considering factors that may hinder language learning. Second, teacher autonomy is seen as the ability of language instructors not only to convey knowledge and language skills but also to understand theory, methods, and approaches that foster learner autonomy through guidance and assistance. Lastly, teacher autonomy

requires teachers to take action in adapting to and leveraging the teaching environment or context, which is influenced by political, social, cultural, and educational factors.

Several authors scrutinize the domains of teacher autonomy. In this respect, Smith and Erdoğan (2008, p.84-85) proposed the following figure to identify the distinction between learner and teacher autonomy.

In relation to professional action:	
A. Self-directed professional action	i.e. 'Self-directed teaching'
B. Capacity for self-directed professional action	i.e. 'Teacher autonomy (capacity to self-direct one's teaching)'
C. Freedom from control over professional action	i.e. 'Teacher autonomy (freedom to self-direct one's teaching)'
In relation to professional development:	
D. Self-directed professional development	i.e. 'Self-directed teacher-learning'
E. Capacity for self-directed professional development	i.e. 'Teacher-learner autonomy (capacity to self-direct one's learning as a teacher)'
F. Freedom from control over professional development	i.e. 'Teacher-learner autonomy (freedom to self-direct one's learning as a teacher)'

Figure 6. Dimensions of teacher autonomy (Smith and Erdoğan, 2008, 84-85).

Regarding Figure 6, they note that the term 'teacher autonomy' is sometimes utilized interchangeably with the 'capacity to foster learner autonomy' in the field of education. However, this capacity is not precisely identical to any or all of the dimensions previously identified.

Pearson and Hall (1993), who are one of the prominent names in the field of teacher autonomy, assure that teacher autonomy consists of two aspects: general teaching autonomy and curriculum autonomy as a construct. They propose that the items contributing to the general autonomy factor were associated with adherence to classroom conduct standards and individual on-the-job discretion, whereas the items loading on the

curricular autonomy factor were focused on the choice of activities, resources, and planning for instruction and organization.

To Khalil (2018), teacher autonomy arises from an intricate interaction between social structures and individual agency, providing valuable understanding into the dynamics of the relationship between these elements.

2.5.3. Teacher autonomy and English language teaching

To the best of our knowledge, the Council of Europe's Modern Languages Project, which aimed to provide people with plenty of possibilities for lifetime foreign language acquisition, gave rise to autonomy in learning a language in the 1970s (Benson, 2007). The paper titled “Autonomy in Foreign Language Learning” written by Henri Holec for the Council of Europe in 1979 serves as the cornerstone for any discussion of autonomy in language acquisition (Holec, 1981, as cited in Little, 1991). Benson (2006) proposes that the idea of autonomy, once confined to specialist literature, has now permeated mainstream language education contexts, leading to its integration and interaction with essential theories related to the discipline, including teacher development, individual differences and sociocultural theory, motivation, and self-regulation and learning practices.

Numerous authors perceive teacher and learner autonomy as intertwined concepts in language learning in essence. English language instruction holds significant importance as it comprises of two essential components: teachers and learners, both of which have a profound impact on the instructional process (Baradaran, 2016; Hosseinzadeh and Baradaran, 2015). In relation to this issue, Benson (2006) also pronounces that teacher autonomy in language teaching refers to the freedom of teachers in curriculum implementation unlike broader educational settings. Correspondingly, Little (1995) puts an emphasis on the interrelation between language learners and teachers by proposing that if language learners' classroom experience has fostered independence and flexibility, they are more inclined to become autonomous users of the target language, similarly, if language teachers' own education has nurtured their autonomy, they are more inclined to effectively promote autonomy in learners. Everhard (2018) also emphasizes that learners will empower their autonomy, ultimately depending on the enhanced skills of foreign language teachers.

On the other hand, some authors concur that language teachers play a pivotal role in fostering development of their learners. With respect to the role of teachers, Kong (2022) posits that English language teachers are not only in charge of teaching English, but they are also responsible for boosting autonomy of their learners. From a similar perspective, Han (2017) highlights that foreign language teachers must be conscious of their duties and responsibilities in fostering learner autonomy, specifically, by considering individual differences when establishing curriculum objectives to nurture communication skills of language learners and promoting their awareness to aid in growing learner autonomy during pedagogical practices.

As the foreign language manifests itself, various authors pinpoint the importance of teacher autonomy in fostering the development of learners' communicative competence as foreign language acquisition progresses. Considering this, Han (2017) contends that language teachers must adapt their roles to facilitate the development of learner autonomy, which necessitates distinct responsibilities compared to those fulfilled in traditional teaching settings. The ethical duty of foreign language teachers is to assist students become competent communicators in their target language, but autonomous development is even more crucial. In a similar vein, Little (1991) proposes that the communicative effectiveness within the target language community relies on learners' ability to independently and confidently fulfill diverse social, psychological, and discourse roles, emphasizing the importance of attaining a considerable level of autonomy as language users.

2.5.4. Research on teacher autonomy

Upon reviewing the relevant literature, it becomes evident that most studies center on the perceptions of pre-service teachers regarding teacher autonomy. This emphasis on pre-service teachers is due to their crucial role as future educators, as noted earlier (Lei, 2009; Maiier and Koval, 2021; Røkenes and Krumsvik, 2016). Besides, researchers delved into investigating the relation between teacher autonomy, and other dimensions including different teaching methods, work satisfaction, technology, and some researchers made research to design valid teacher autonomy scales for further research to contribute to the field. In addition, research in Türkiye related to teacher autonomy is of significant interest since this current study is conducted in a Turkish context; thus research on teacher

autonomy in Turkish ELT is discussed as well. As a result, the studies on teacher autonomy are taken into consideration and presented in the subheadings as mentioned above in this section.

2.5.4.1. Studies concerning future of education

Numerous researchers have examined how future teachers perceive the concept of teacher autonomy in accomplishing goals of education. For instance, Ok (2016) conducted a mixed-methods study to investigate how future teachers perceived their instructors' expectations for them both during class and outside of class in the context of an EFL teacher training program. To this end, a five-point Likert scale was administered to 170 pre-service teachers initially, and then 10 pre-service teachers answered two open-ended questions in a written way. Based on the findings, it was concluded that participants agreed that certain techniques employed by their instructors assisted them in building autonomy.

Recruiting the similar group as participants, Yıldırım (2017) conducted a case study in a state university in a Turkish setting in an attempt to explore administrators' and EFL instructors' perceptions regarding teacher autonomy, and the subordinate factors such as curriculum, assessment, classroom management fostering or hindering autonomy. To that end, the researcher applied a two-fold data collection procedure. First, a questionnaire was administered to both participants to gauge their perceptions about teacher autonomy, next participants were asked about the qualities of teachers seeking more autonomy during the semi-structured interviews. According to the findings, most of the instructors relate autonomy to the concept of freedom in guiding classroom content, in addition, they report that teacher autonomy facilitates motivation of teachers to maintain their job. The findings indicated that EFL instructors generally felt they had limited autonomy, yet they expressed a strong desire for more autonomy in all areas. Additionally, administrators' perspectives on teacher autonomy varied across six domains. They were in favor of instructors having autonomy over professional development and classroom management but were opposed to granting autonomy in assessment and institutional operations. However, both parties acknowledge the essential impact of teacher autonomy on teachers and efficient teaching methods.

Similarly, Nikolaeva, Zadorozhna, and Datskiv (2019) conducted a study to assess learner autonomy and the development of English language skills among pre-service foreign language teachers. The study utilized a blended learning approach and focused on the course “Teaching English to learners with special educational needs as a foreign language.” The main objective was to determine if there were any changes or dynamics in the participants’ learner autonomy and English language skills due to the course’s content and activities. In this regard, two online questionnaires were utilized to collect general background information about English level of the participants, and their autonomy level. The results show that pre-service teachers were highly content with the course’s impact on their professional and language skills, as the hybrid learning approach improved their learning experience, outcomes, motivation, confidence, and satisfaction, ultimately fostering greater autonomy.

Moreover, Yildirim (2013) conducted research to determine whether portfolios influence autonomy of ELT student-teachers and how the utilization of these portfolios enhances their autonomy in terms of personal and professional growth. For this purpose, she designed a 14-week research program involving 21 3rd-grade pre-service ELT teachers studying at a state university in Türkiye. The data collection tools included a questionnaire to measure autonomy, as well as meetings, graded target sheets, reflective papers, and introduction letters as portfolio evidence, which were used after gathering quantitative data. Based on the findings, it was deduced that student-teachers’ use of portfolios contributes to their autonomy growth both for learning and teaching. In addition, it was discovered that participants took responsibility for planning, organizing, overseeing, and tracking their own learning thanks to the portfolio process. Furthermore, the participants reported that they cultivated three distinct forms of consciousness: self-awareness, awareness of the subject matter, and awareness of the teaching process, all with the help of the portfolio process.

2.5.4.2. Studies exploring various constructs with teacher autonomy

The factors investigated in the studies vary based on the context, the need of research, and the interest of the researchers. As a result, it seems difficult to identify the common constructs examined in addition to teacher autonomy in the research. In an effort to reveal

the connection between EFL teachers' neuro-linguistic programming (NLP) and their autonomy, Hosseinzadeh and Baradaran (2015) conducted a correlational study in an Iranian setting. 200 EFL teachers, working at various language schools, were involved in the study, and the Teaching Autonomy Scale, which was developed by Pearson and Moomaw in 2005, and a scale to measure neuro-linguistic programming by Pishghadam (2011, as cited in Hosseinzadeh and Baradaran, 2015), were administered to them. Out of the questionnaires, 129 of them were deemed to be suitable for the analysis of data. Following data analysis, it was evident that Curriculum autonomy and Total autonomy showed no significant correlation with Neuro-linguistic Programming, whereas General autonomy exhibited a favorable and important relationship. Based on the finding of a favorable and important relationship between General autonomy and Neuro-linguistic Programming (NLP) in the present study, the authors suggest that fostering teacher autonomy could have a positive impact on instructional outcomes. Hosseinzadeh and Baradaran (2015) conclude that, in comparison to several other factors, teachers' autonomy has a substantial impact on how well they teach, make decisions, and operate the overall educational system,.

In the following year, Baradaran (2016) made a research on the relationship between teacher autonomy and teaching styles in the same setting. However, only female EFL teachers participated in the study. As the study included two variables, two distinct scales were administered to the participants as instruments. The researcher utilized Grasha Teaching Style Inventory Questionnaire (1994, as cited in Baradaran, 2016) regarding teaching styles, and Teaching Autonomy Scale by Pearson and Moomaw (2005, as cited in Baradaran, 2016) was used to gauge teacher autonomy level. The findings of this indicated no significant correlation between teachers' different teaching styles and their autonomy.

In their study, Skaalvik and Skaalvik (2014) scrutinized the impact of teacher autonomy and self-efficacy on work satisfaction, teacher engagement, and burnout independently. The findings uncovered that both teacher autonomy and self-efficacy had a favorable impact on work satisfaction and engagement. In contrast, they had a negative impact on emotional exhaustion independently.

In a case study conducted in a Chinese context, Kong (2022) sought to understand teachers' perceptions regarding the role of teacher autonomy in English teaching and learning. In spite of the relatively small sample size, the researcher argued that this study offered significant understandings into the current situation of English language

classrooms in China. The study also provides evidence indicating a strong desire for both teacher autonomy and the cultivation of learner autonomy within Chinese schools' English language classrooms. Additionally, it outlines four key themes that enhance teacher autonomy based on data gathered from interviews: participation in in-service training programs, readiness to navigate systemic constraints, the establishment of personal professional goals, and a sense of responsibility.

Technology emerges as another construct which is scrutinized in relation to teacher autonomy in the studies. In this regard, Koçak and Karatepe (2022) sought to address the connection between 21st century teaching skills and teacher autonomy; additionally, they looked at the distinction between those variables depending on gender, workplace (state or private school), seniority of teachers, and type of school. To this end, researchers employed a questionnaire comprising of two scales developed by Göksun (2016, as cited in Koçak and Karatepe 2022) and Çolak (2016, as cited in Koçak and Karatepe 2022) respectively to gauge 21st teaching skills and teacher autonomy. Based on the positive relationship between them, it was deduced that teachers with higher levels of autonomy tended to exhibit more advanced teaching skills relevant to the 21st century. Surprisingly, this study uncovered that there was no notable correlation between 21st century teaching skills and the subordinate factors searched including gender, workplace, seniority, and type of school. As for their relation to teacher autonomy, teacher autonomy differs greatly according to the type of school teachers teach, and it was figured out that high school teachers experience comparatively restricted opportunities for autonomy in curriculum development, professional growth, and professional communication in contrast to teachers in elementary and secondary schools. However, no obvious differences were found based on their gender, level of seniority, or type of school they worked at. When scrutinizing answers related to subdimensions on the autonomy scale, teachers ranked autonomy in teaching process highest, and autonomy in the curriculum, in professional communication, and in professional development followed it in descending order.

In a similar vein, Kameshwara, Eryilmaz, Tian and Sandoval-Hernández (2020) conducted a study in an Italian setting to scrutinize the association between digital skills of 8th-grade students and teacher autonomy, as well as the influence of two forms of teacher professional development on this link. The results illustrated that teacher autonomy had a positive influence on teachers' pedagogy on its own; however, no significant link was found between teacher autonomy and students' digital skills. The authors suggest that the

integration of autonomy and professional development through reciprocal learning may positively impact students' computer literacy.

Another correlational study by Andina, Cahyono and Widiati (2020) that attempted to determine the relationship among EFL students' writing performance, digital competence and autonomy level was carried out in an Indonesian educational setting. 320 students at an Indonesian university's English department, who were engaged in an intense writing course, were recruited for this study. Students were required to compose a 200-word essay on a subject of their choice in order to gather the pertinent data. Then, they completed two separate online questionnaires emphasizing on autonomy and digital competence. It is found that writing performance improves along with learner autonomy. It is expected that pupils who use technology in their writing would produce better writing than those who do not.

Furthermore, several researchers have undertaken extensive research endeavors with the purpose of developing robust and valid teacher autonomy scales. These scales are designed to be useful resources for subsequent research, considerably advancing our understanding of teacher autonomy. Acknowledged as the prominent names in the field, Pearson and Hall (1993) conducted a two-fold study in order to develop a valid and reliable tool to gauge teacher autonomy. In the first phase, they designed a 35-item scale and applied it to a small sample as a part of a pilot study. They administered the tool including 20 items after analysis of the pilot study to a larger sample after verifying its reliability and construct validity, and they scrutinized the relation between teachers' autonomy and various factors such as gender, age, teaching experience, level of education, the educational context they taught in the second phase of the research. The findings revealed that despite not differing by gender or level of education, teacher autonomy did not increase with age or prior teaching experience. As for the educational context, it was discovered that secondary school teachers had higher autonomy compared to the ones teaching at elementary and high school levels.

Subsequently, Pearson and Moomaw (2006) conducted a cross-cultural study to validate the pre-existing factor structure derived from prior research (Pearson and Hall, 1993, as cited in Pearson and Moomaw, 2006). In order to accomplish their objective, curriculum autonomy was defined by the researchers as the utilization of items that measured activity and selection of materials, as well as instructional planning, whereas general teaching autonomy was characterized by items gauging classroom conduct standards and personal

decision-making during work. After figuring out that the dimensions covered in the scale were consistent, the Teacher Autonomy Scale was applied to 300 teachers involved in the study. As this study was designed to assess the items' consistency in the scale primarily, it was concluded that the items demonstrate logical consistency with existing literature, making them potentially useful for future researchers studying the autonomy construct.

2.5.4.3. Studies in Turkish context

Khalil (2018) contends that a paucity of research exists on the idea of teacher autonomy in Türkiye. Nonetheless, the concept of teacher autonomy in the field of teaching English has piqued the interest of several researchers. In this manner, Koçak (2018) investigated the teacher autonomy of EFL teachers in a Turkish context and she concluded that the centralized educational system in Türkiye may be the main cause of instructors' lack of self-awareness when it comes to time management. Due to the strict and intense substance of the curriculum, one of the major issues impeding teacher autonomy, teachers may feel less autonomous in their classrooms due to time constraints and a demanding curriculum. Furthermore, teachers are in charge of educating students according to the curriculum framed and course books handed out by MoNE in Türkiye and of preparing their students for centralized exams, that is why teachers cannot act independently and fully autonomously regarding their content of teaching.

Likewise, Khalil (2018) investigated the perceptions of EFL secondary school teachers about teacher autonomy in a Turkish setting, and she also examined the application of the concept in regard to four dimensions: curriculum creation, professional development, teaching and assessment, and school administration. Thus, she applied a mixed-methods approach to fulfill her research by adopting a questionnaire, class observations, and follow-up interviews with EFL teachers and school administrators as data collection tools. According to findings of this study, teacher autonomy held significant importance within the Turkish educational system. As for sub-factors, most of the participant reported that they felt free to apply teaching methods and design assessment tools. However, opinions were generally negative concerning school management, especially regarding financial issues. For the third sub-factor, the majority of participants said they never had any

authority in influencing how in-service training was provided on a national level or only sometimes did they. Regarding the last sub-factor, more than half of the participants perceived their duty as simply implementing the curriculum set by the national education authorities. In the interviews, the terms ‘management’, ‘autonomy’, ‘aptitude’, ‘right to make decisions’, ‘self-esteem’, and ‘negotiation’ (p. 270) emerged as the prevailing expression to convey the concept of autonomy; however, the emphasis was on the term ‘freedom’ by most of the participants. One of the interviewees among administrators stated that teachers were provided with ample opportunities to foster their autonomy thanks to technological facilities in the classroom. Nevertheless, the researcher observed that teachers were left to handle any technical problems they encountered in the class on their own and to find another plan to maintain the class during the observations. All in all, it was concluded that a significant number of the participants possessed teacher autonomy in adapting teaching methods according to needs of their students and assessing their learning.

In conclusion, this chapter conducted a thorough exploration of research on digital competence, self-efficacy, and teacher autonomy within the field of English language teaching. The initial focus was on clarifying conceptual issues, where various terms such as ‘media literacy,’ ‘information literacy,’ ‘ICT literacy,’ ‘digital fluency,’ ‘digital literacy,’ and ‘digital competence’ emerged in the literature. Given its prevalence in the educational context, the term ‘digital competence’ was selected for use in the current study. Subsequently, the chapter highlighted studies on digital competence in education and in the field of ELT, categorizing them based on the target groups involved.

Moreover, the historical background of self-efficacy was meticulously traced, incorporating diverse definitions from the literature. The chapter also illuminated the scales developed to measure self-efficacy and examined studies contributing to a nuanced understanding of this psychological construct.

The intricate relationship between learner autonomy and teacher autonomy served as a foundational point for research, emphasizing definitional terms and domains of teacher autonomy. Additionally, the chapter explored the specific connection between teacher autonomy and ELT, offering valuable insights into the dynamics of autonomy within the language teaching context.

CHAPTER III

METHODOLOGY

This chapter outlines design and methodology of the study, including population and sample of the research group, as well as the data collection process. Subsequently, a detailed presentation of the data collection tools and analysis is provided to investigate the relationship among digital competence, self-efficacy, and autonomy of secondary school EFL teachers. Additionally, the influence of participants' digital competence, gender, years of teaching experience, and educational background on their digital competence is examined.

3.1. Method of the study

This study aimed to examine to what extent the self-efficacy and teacher autonomy of secondary school EFL teachers in Türkiye predicted their digital competence. Moreover, it sought to address the influence of gender, years of teaching experience and educational background of the participants on their digital competence levels. To this end, it was designed as a predictive correlational research design, a quantitative research method, to find out the relationship among the variables. According to Fraenkel, Wallen and Hyun (2012), quantitative data is acquired when measuring a variable on a scale that reflects the quantity of the variable present, and predictive correlational research design enables the researcher to distribute the data tools to a large number of people without modification or interference. Moreover, Dörnyei (2007) proposes that it provides a basis for making predictions and testing hypotheses, aiding in the development and validation of theories. It also allows for comparisons between different groups and enables the examination of the impact of various factors on the studied phenomenon. These data are expressed as scores, where higher scores indicate a larger quantity of the variable compared to lower scores. Hence, quantitative methods enable the identification of statistical patterns and relationships among variables, providing a deeper understanding of the phenomena under investigation (Dörnyei, 2007).

As this study concentrated on three constructs as digital competence, self-efficacy and teacher autonomy, three instruments which were designed to gauge the aforementioned constructs were employed in this current study. Therefore, data was collected through the following instruments: the first scale known as the DIGIGLO tool developed by Alarcón, Jimenez and Vicente-Yagüe (2020), the second scale developed by Hoy and Woolfolk (1993), and the final scale designed by Pearson and Moomaw (2006). An e-mail was sent to each researcher who developed the aforementioned scales to request their permission, and they are provided in the Appendix 1.

3.2. Participants

The study was carried out during the end of the first term and the beginnings of the second term of 2023-2024 academic years, and the target group was the secondary school English language teachers in Turkish context. The universe of the study was Türkiye. Regarding the population of the study, Khalil (2018) states that statistics show that there are 63,619 English teachers employed by Turkish public schools. Additionally, it is found that there are a total of 102,463 English language teachers in Türkiye according to the news released by Anadolu Ajansı (Anadolu Agency- an official news agency of Türkiye) lately (2022). The sample of the study was 301 EFL teachers who teach 5th, 6th, 7th and 8th grade learners at public secondary and imam hatip secondary schools, and private secondary schools. The participants were selected through convenience sampling since it allows the researcher to reach out to the sample easily (Nikolopoulou, 2022). The questionnaire was disseminated to the participants online.

Before proceeding to the analysis of the data in the study, the dataset was checked for missing and incorrect data using frequency analysis. No missing or incorrect data entries were found in the dataset. Subsequently, the status of voluntary response to the scale was examined, and one participant who indicated s/he did not respond voluntarily was excluded from the analysis. Additionally, a person-fit analysis was conducted before analyzing the data to identify individuals who provided careless responses to the scale items. Person-fit analysis is a method used to identify individuals with inconsistent response patterns based on their answer patterns (Reise, 1990). As a result of the person-fit analysis, the responses of 76 participants in the dataset were identified as inconsistent and were excluded from the

analysis. Furthermore, 25 participants who indicated they did not work at a secondary school were also excluded from the analysis since the study recruited on secondary school English teachers as participants. After excluding the inconsistent responses, 301 secondary school EFL teachers made up of the participants of this study. The demographic distribution of the participants is shown in Table 1.

Table 1

Distribution of Demographic Information of Participants

Variables	Group	N	Percent
Gender	Female	225	74.75
	Male	76	25.25
Years of teaching experience	1-5	41	13.29
	6-10	106	35.22
	11-15	71	23.59
	16-20	51	16.94
	20 years and over	33	10.96
Educational Background	Bachelor's	223	74.09
	Master of Art	68	22.59
	PhD	10	3.32
	Total	301	100

According to Table 1, out of the teachers participating in the research, 225 of them are female (74.75%), while 76 of them are male (25.25%). There are 41 teachers (13.29%) with 1–5 years of experience, 106 teachers (35.22%) with 6–10 years, 71 teachers (23.59%) with 11–15 years, 51 teachers (16.94%) with 16–20 years, 33 teachers (10.96%) with 20 years and more teaching experience. Finally, 223 teachers (74.09%) have undergraduate (Bachelor's) degree, 78 of teachers have graduate degree. Specifically, 68 teachers have an MA degree, while 10 teachers have a PhD degree.

3.3. Data collection process and data collection instruments

3.3.1. Data collection process

As for the data collection process, the researcher initially sought consent by sending e-mails to the developers of the scales intended for use in the study in order to get their consent (see Appendix 1). Before conducting the study, the researcher initially sought approval of the Ethics Committee of Sakarya University. Upon obtaining authorization to conduct this research (see Appendix 2 for Ethical Permission), an application was then submitted to the Ministry of National Education (MoNE) through the university for research permission before initiating data collection (see Appendix 3 for Research Permission from MoNE). Subsequently, the web link to the online questionnaire was sent to the school headmasters through the MoNE documentation system known as DYS once permission to gather data from secondary school English teachers in Türkiye was obtained. Consequently, it was disseminated among English language teachers, and those who volunteered to take part in the study completed anonymously. The ‘Microsoft Forms’ tool was utilized to create the online questionnaire because it allows real-time monitoring of responses and downloads them in .xls format, facilitating processing and minimizing coding errors. In addition, using online tool enables researcher to access data rapidly, include participants from different settings, and a larger sample size for enhanced statistical power (Topuzovska-Latkovikj and Borota-Popovska, 2019).

3.3.2. Data collection instruments

Quantitative data was collected using an online questionnaire that comprised four sections: demographic data (such as gender, years of teaching experience, educational background, and a verification question to confirm secondary school employment of the participants), the scale for gauging teachers’ digital competence (DIGIGLO tool- DT), teacher self-efficacy scale (TES), and teacher autonomy scale (TAS). The questionnaire was applied in English, in the original language in which the scales were created, to the participants and the participants were English as a foreign language teachers. Peytcheva (2020) discusses the impacts of administering surveys in different languages and the author deduces that cultural norms might influence the comprehension of the respondents. Additionally,

Peytcheva (2020) asserts that a match between the language used for encoding and the language used for recall in surveys should result in more accurate responses from bilingual respondents. In this vein, English language teachers in the current study were trained to recognize the concepts in English in the questionnaire and they are familiar with the language in a professional context. Additionally, the items in the questionnaire did not include any culturally specific information; instead, they were all related to educational content that the teachers were accustomed to.

The informed consent form for the participants and questions related to demographic information in the questionnaire were provided in Appendix 4, the following section presents the scales employed in this study and questionnaire items were provided in Appendix 5, Appendix 6, and Appendix 7 respectively. The information about the scales used in the study are illustrated in Table 2 below:

Table 2

The Scales Used in the Study

Name of the scale	Number of Items	Rating scale
DIGIGLO tool	29	6-point Likert scale
Teachers Efficacy Scale	10	6-point Likert scale
Teacher Autonomy Scale	18	4-point Likert scale

3.3.2.1. DIGIGLO tool

The DIGIGLO tool has been developed by Alarcón et al. (2020) for evaluating the digital competence of educators. Consisting of 29 items, each rated on a 6-point Likert scale (ranging from “Totally disagree” to “Totally agree”), it addresses eight aspects of digital competence. The initial six factors align with those outlined in the DigCompEdu Framework (European Union, 2018 as cited in Alarcón et al., 2020): 1) Professional engagement (PE) (3 items), 2) Digital resources (DR) (3 items), 3) Teaching and learning (TL) (4 items), 4) Assessment (A) (3 items), 5) Empowering learners (EL) (3 items), and

6) Facilitating learners' digital competence (FLDC) (5 items). The remaining two factors pertain to the digital tools and opportunities available to educators in their work context: 7) Digital environment (DE) (5 items) and 8) Extrinsic digital motivation (EDM) (3 items). The abbreviations of the factors in parentheses are used in the rest of the current study to refer to the full names of them.

This scale expands upon the The European Framework for the Digital Competence of Educators (DigCompEdu) by creating and validating an evaluation instrument that encompasses a total of eight factors (European Union, 2018 as cited in Alarcón et al., 2020). These factors comprise the six aspects addressed in DigCompEdu, as well as two novel facets related to external elements influencing educators' digital competence. These latter facets are included in the tool regarding the working environment of educators which could either support or hinder the advancement of their digital skills.

This scale was administered to 509 educators working in Latin America and Spain by the researchers who designed the scale. The findings show that the DIGIGLO is a valid and dependable instrument for evaluating teacher educators' digital competency. The model suggested by the study, featuring eight primary factors corresponding to questionnaire areas, received support through confirmatory factor analysis. These factors collectively loaded onto a single second-order factor representing overall digital competence. High internal consistency (Cronbach's alpha) was observed across all eight factors (above .90), and the questionnaire as a whole demonstrated satisfactory consistency (.813).

Drawing on the study results, the investigators deduce that the instrument appears suitable for evaluating various aspects of educators' digital competence. It could serve as a self-assessment tool for educators or as a performance evaluation tool for institutions. Additionally, they suggest that this assessment could identify areas for improvement and highlight strengths to be nurtured and utilized.

Since this scale was first created to assess instructors' digital competency, the aforementioned scale was sent to two experts at English Language Teaching Department at a state university to determine its applicability. They concluded that this scale covered various aspects of digital competence, as a result it was found appropriate to utilize in this study (see Appendix 8 for experts opinion).

Notably, this scale stands out as the most recent and up-to-date tool in the relevant research, specifically designed for measuring digital competency in learning environments.

Taking the aim of the current study into consideration, it is plausible to use as a scale in the current study. Consequently, this scale was considered suitable for adoption in the current study due to its relevance, reliability, validity, and coverage of items from the European Framework, as well as the inclusion of two constructs that are of significant interest to this study.

Since the structure of the scales was previously determined, confirmatory factor analysis (CFA) was used to assess construct validity. Prior to performing the CFA, the Mardia test was conducted to examine the assumption of multivariate normal distribution for each scale. The results of the Mardia test for each scale are presented under the relevant scale's title in Table 3, Table 7, Table 11 respectively. A Mardia value, which is based on kurtosis and skewness functions, below 3 indicates that the assumption of multivariate normality is met (Garson, 2012). It was found that the Mardia value for each scale was higher than 3. Therefore, it can be said that the assumption of multivariate normal distribution was not met for any of the scales. As a result, the robust maximum likelihood estimation method was used during the CFA. While performing the CFA, model-data fit was evaluated by examining fit indices, factor loadings, and error variances. To determine the scale scores, the Cronbach's alpha coefficient was calculated. Additionally, item analyses were performed using corrected item-total correlations and the item distinctiveness index based on the upper and lower groups.

Table 3

Results of Mardia Test for Scale DIGIGLO

Variable	Min	Max	Skew	c.r.	Kurtosis	c.r.
p2_29	1.000	6.000	.339	2.404	-.789	-2.794
p2_28	1.000	6.000	.294	2.084	-.516	-1.828
p2_27	1.000	6.000	.380	2.689	-.238	-.841
p2_26	1.000	6.000	.453	3.208	-.613	-2.172
p2_25	1.000	6.000	.429	3.038	-.568	-2.011
p2_24	1.000	6.000	.212	1.500	-.668	-2.367
p2_23	1.000	6.000	.283	2.001	-.581	-2.056
p2_22	1.000	6.000	.315	2.233	-.374	-1.325
p2_21	1.000	6.000	.265	1.878	-.475	-1.682
p2_20	1.000	6.000	.304	2.156	-.423	-1.498
p2_19	1.000	6.000	.432	3.058	-.455	-1.612
p2_18	1.000	6.000	.251	1.781	-.393	-1.392
p2_17	1.000	6.000	.204	1.441	-.369	-1.305
p2_14	1.000	6.000	.054	.383	-.471	-1.667
p2_15	1.000	6.000	-.094	-.669	-.444	-1.573
p2_16	1.000	6.000	-.339	-2.404	-.317	-1.124
p2_11	1.000	6.000	.134	.950	-.465	-1.647
p2_12	1.000	6.000	.007	.046	-.626	-2.218
p2_13	1.000	6.000	-.205	-1.455	-.683	-2.420
p2_7	1.000	6.000	.005	.037	-.621	-2.198
p2_8	1.000	6.000	-.220	-1.561	-.598	-2.116
p2_9	1.000	6.000	-.273	-1.932	-.625	-2.212
p2_10	1.000	6.000	.031	.220	-.708	-2.507
p2_4	1.000	6.000	-.250	-1.772	-.489	-1.732

Variable	Min	Max	Skew	c.r.	Kurtosis	c.r.
p2_5	1.000	6.000	-.281	-1.992	-.467	-1.656
p2_6	1.000	6.000	-.247	-1.753	-.608	-2.154
p2_1	1.000	6.000	.084	.593	-.650	-2.302
p2_2	1.000	6.000	-.131	-.926	-.355	-1.257
p2_3	1.000	6.000	-.158	-1.118	-.429	-1.520
Multivariate					313.237	64.081

DIGIGLO Tool, which was used in the scope of this study, consists of 29 items and 8 factors. Consequently, a confirmatory factor analysis (CFA) was conducted to examine the scale's validity using the data set gathered in the research. To assess the model-data fit, fit indices, factor loading values, and error variances were scrutinized. Table 3 displays fit indices, factor loading values (max-min), and error variance (max-min) values.

Table 4

Results of the DIGIGLO Tool's Confirmatory Factor Analysis

								Factor Loading Values		Error Variances	
	χ^2	χ^2/sd	p	CFI	NNFI	IFI	RMSEA	max	min	max	Min
Scale	769.08	2,20	0.000	0.99	0.98	0.99	0.063	0.95	0.78	0.39	0.09
Proposed		$\chi^2/sd \leq 3$		≥ 0.90	≥ 0.90	≥ 0.90	≤ 0.080	$\geq 0,30$		$\leq 0,90$	

When Table 4 is examined, it is observed that the χ^2/df value is less than 3, indicating that the model fits the data well. The CFI value is determined to be 0.99, the NNFI value is 0.98, and the IFI value is 0.99. These values, which are above 0.90, indicate an excellent fit of the model to the data (Sümer, 2000, as cited in Çokluk, Şekercioğlu, and Büyüköztürk, 2010). When evaluated in terms of the RMSEA index, it is found that this index is 0.063 for the model, which is below 0.080, indicating a good fit of the model to the data according to this index. Additionally, the results of the confirmatory factor analysis are consistent with the original scale's results, which show eight-factor distribution for the tool and have factor loadings between .86 and .94 (Alarcón et al.,2020). Overall, when the fit indices are considered, it can be seen that the eight-factor structure of the DIGIGLO Tool fits the data well. The factor loading values of all items in the scale are higher than 0.30. Therefore, it can be interpreted that all items serve their purpose.

Figure 7 illustrates the measurement model that was derived from the analysis results.

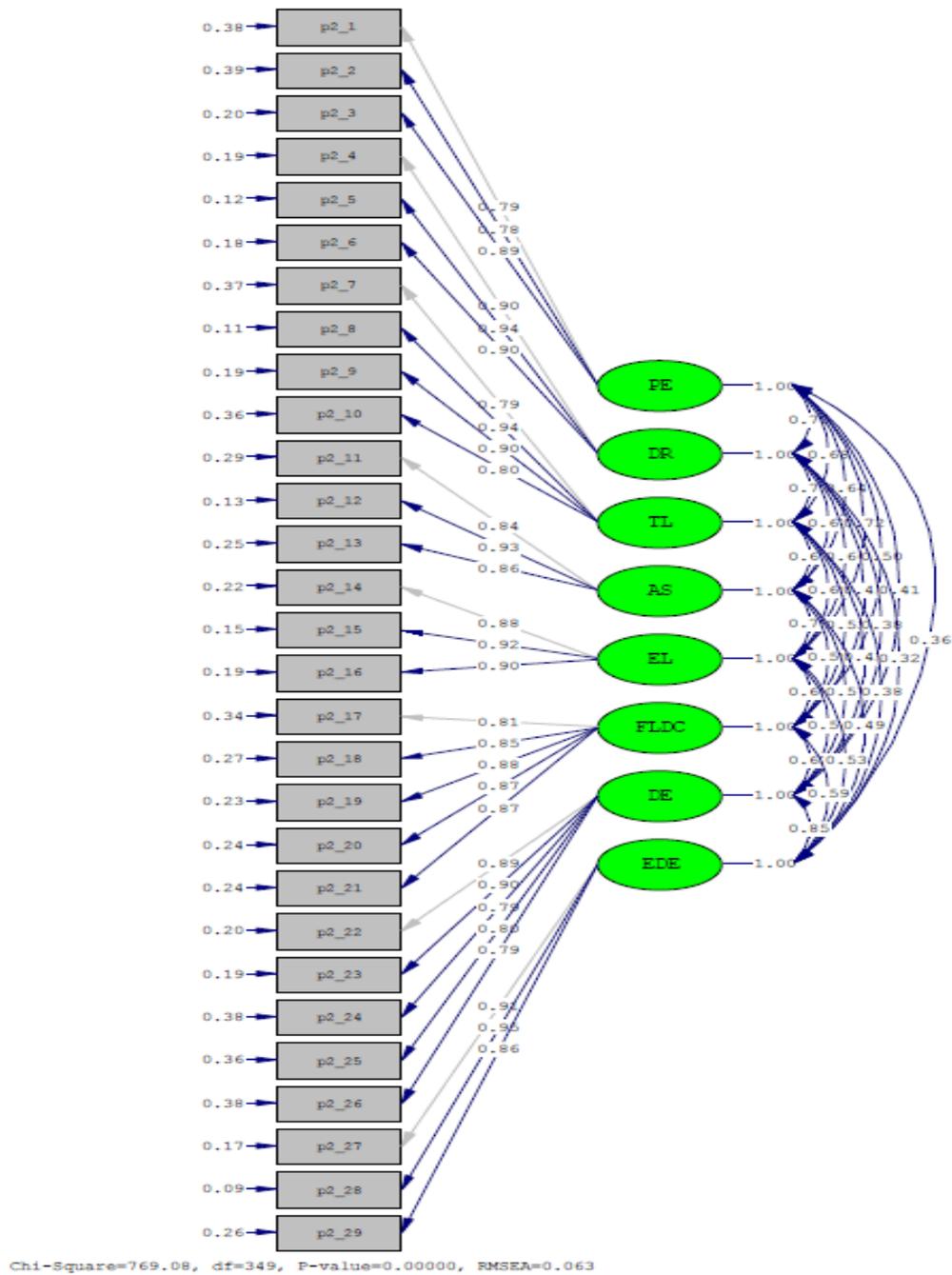


Figure 7. Measurement Model of the DIGIGLO Tool

The DIGIGLO Tool Scale's item distinctiveness was assessed by sorting scale scores from highest to lowest, classifying the top 27% as the upper group and the bottom 27% as the lower group. T-tests were used to examine differences between items in the upper and lower groups. Correlations between corrected item scores and overall scores were also computed. Table 5 presents the findings.

Table 5

Results of the DIGIGLO Tool's Item Analysis

	Item No	Corrected Item-Total Correlation	Upper Group		Lower Group		T
			\bar{X}	ss	\bar{X}	ss	
PE	1	0.70	5.32	0.79	2.63	0.68	23.289
	2	0.71	5.36	0.68	2.63	0.73	24.632
	3	0.79	5.42	0.63	2.60	0.72	26.504
DR	4	0.86	5.70	0.51	2.54	0.81	29.780
	5	0.89	5.73	0.48	2.53	0.85	29.487
	6	0.86	5.83	0.38	2.60	0.85	31.240
TL	7	0.74	5.36	0.83	2.63	0.72	22.474
	8	0.89	5.67	0.52	2.59	0.67	32.618
	9	0.85	5.64	0.48	2.74	0.67	31.731
A	10	0.76	5.38	0.72	2.60	0.75	24.043
	11	0.80	5.20	0.77	2.42	0.71	24.033
	12	0.86	5.35	0.64	2.42	0.69	28.142
EL	13	0.80	5.52	0.59	2.48	0.76	28.335
	14	0.83	5.36	0.62	2.57	0.69	27.138
	15	0.88	5.46	0.53	2.69	0.74	27.531
FLDC	16	0.84	5.57	0.50	2.64	0.75	29.329
	17	0.77	4.83	0.97	2.35	0.79	17.803
	18	0.83	4.86	0.83	2.20	0.66	22.584
DE	19	0.85	4.79	0.90	1.89	0.57	24.424
	20	0.83	4.85	0.91	2.06	0.68	22.140
	21	0.83	4.95	0.81	2.10	0.74	23.552
EDE	22	0.81	4.73	1.01	1.85	0.64	21.664
	23	0.83	4.91	0.90	1.94	0.75	22.932
	24	0.76	4.80	0.94	1.95	0.79	20.901
	25	0.78	4.69	1.00	1.72	0.66	22.456
	26	0.79	4.88	1.04	1.75	0.66	22.780
	27	0.86	4.75	0.96	1.88	0.68	22.095
	28	0.90	4.91	0.78	1.73	0.59	29.330
	29	0.82	5.04	0.86	1.53	0.59	30.249

p<0.05

When Table 5 is examined, it is observed that the corrected item-total score correlation values for the DIGIGLO Tool are between 0.70 and 0.79 for PE factor; between 0.86 and 0.89 for DR factor; between 0.74 and 0.89 for TL factor; between 0.80 and 0.86 for A factor; between 0.83 and 0.88 for EL factor; between 0.77 and 0.85 for FLDC factor; between 0.76 and 0.83 for DE factor; and between 0.82 and 0.90 for EDE factor. Item-total score correlations of 0.30 and above indicate that the item measures the structure under consideration (Nunnally, 1978, as cited in Hobart and Cano, 2009). In this respect, the

item-total score correlations of the DIGIGLO Tool are greater than 0.30, thus it indicates that the validity of each item is ensured. A t-test between the upper and lower groups resulted in a significant difference for all items ($p < 0.05$). Accordingly, it can be said that the items in the DIGIGLO Tool are successful in distinguishing individuals in the lower group from those in the upper group.

Additionally, the Cronbach's alpha value for the scale is presented in Table 6.

Table 6

Cronbach's alpha value of the DIGIGLO Tool

	The Number of Items	Cronbach's Alpha Value
PE	3	0.86
DR	3	0.94
TL	4	0.92
A	3	0.91
EL	3	0.93
FLDC	5	0.93
DE	5	0.92
EDE	3	0.93

When examining Table 6 above, The DT sub-factors' Cronbach's alpha values were identified to range from 0.86 to 0.94. Reliability measurements below 0.50 are deemed to have low reliability, values ranging between 0.50 and 0.80 are considered moderately reliable, and values exceeding 0.80 are regarded as highly reliable (Salvucci, Walter, Conley, Fink, and Saba, 1997). Therefore, the measures were proved to have high reliability because the Cronbach's alpha values were higher than 0.80 as shown above.

3.3.2.2. Self-efficacy scale

As for the second scale in the questionnaire, teacher efficacy scale was created by Hoy and Woolfolk (1993) based on the self-efficacy scale by Gimbson and Dembo (1984, as cited in Tshannen-Moran et al., 1998) with the aim of offering a more precise portrayal of teachers' efficacy beliefs in a short form of the original scale. While the original scale consisted of 30 items, the scale adopted by Hoy and Woolfolk (1993) was reduced to 10

items. This reduction was achieved through a more in-depth analysis of specific instructional tasks and contexts, moving beyond a focus solely on the general challenges commonly encountered by teachers. The researchers included only the items with the highest factor loadings from the previous study. Consequently, the scale is composed of the items regarding general and personal teaching efficacy, which comprises a 6-item Likert scale containing 10 items in total.

Within this scale, items 1 and 2 are related to learners' efforts in learning, whereas item 5 is related to parental involvement in learners' learning. The rest of the items, numbered 3, 4, 6, 7, 8, 9, and 10 are related to teachers' contributions to learning process.

The researchers distributed this scale to 179 elementary school teachers employed in diverse areas and socioeconomic settings across the state of New Jersey. The reliability alpha coefficients were calculated as .77 for personal teaching efficacy and .72 for general teaching efficacy.

As this scale was already proven to be valid and reliable to gauge efficacy of teachers in a number of studies (Celep, 2000; Çapa Aydın and Hoy, 2005; Demirkol, 2023; Kazu and Pullu, 2023; Özbilen, Canbulat, and Çekiç, 2020; Tuğtekin, Barut-Tuğtekin, and Dursun, 2018), and the developers of this scale claim that it offers a more accurate of representation teachers' efficacy beliefs especially in the context of teaching rather than only general challenges, it was employed in the current study. Furthermore, the number of items and the statements were also in accordance with the other scales administered in the current study.

Table 7 shows the results of Mardia test for TES below.

Table 7

The Results of Mardia Test for TES

Variable	Min	Max	Skew	c.r.	Kurtosis	c.r.
p3_1	1.000	6.000	-.720	-5.098	-.371	-1.315
p3_2	1.000	6.000	-1.055	-7.474	.212	.751
p3_3	1.000	6.000	-.650	-4.606	-.214	-.757
p3_4	1.000	6.000	-.715	-5.061	-.299	-1.061
p3_5	1.000	6.000	-1.374	-9.732	1.126	3.989
p3_6	1.000	6.000	-.922	-6.534	.299	1.061
p3_7	1.000	6.000	-.900	-6.371	.221	.784
p3_8	1.000	6.000	-.896	-6.346	.194	.686
p3_9	1.000	6.000	-.582	-4.123	-.313	-1.110
p3_10	1.000	6.000	-.619	-4.384	-.315	-1.115
Multivariate					67.970	38.060

The Teacher Self-Efficacy Scale, which was used within the scope of the research, consists of 10 items, and a single factor. Confirmatory factor analysis was conducted to examine the validity of the scale's structure using the dataset collected in the research. In the confirmatory factor analysis, fit index values, factor loading values, and error variances were examined to evaluate the model-data fit. Fit indices, factor loading values (max-min), and error variance (max-min) values are presented in Table 8 below:

Table 8

Results of the TES Confirmatory Factor Analysis

								Factor Loading Values		Error Variances	
	χ^2	χ^2/sd	p	CFI	NNFI	IFI	RMSEA	max	min	max	min
Scale	127	3.98	0.00	0.98	0.97	0.98	0.100	0.8	0.6	0.5	0.3
Proposed		$\chi^2/sd \leq 3$		≥ 0.9	≥ 0.9	≥ 0.9	≤ 0.080	$\geq 0,30$		$\leq 0,90$	

When Table 8 is examined, it can be seen that the χ^2/df value is between 3 and 5, indicating that the model moderately fits the data. The CFI value is 0.98, the NNFI value is 0.97, and the IFI value is 0.98. These values being above 0.90 indicate that the model fits the data very well (Tabachnick, Fidell, and Ullman, 2013). Regarding the RMSEA index, the value for this index is found to be 0.100 for the model, suggesting that the model exhibits low fit to the data since this value is between 0.080 and 0.10. Overall, when evaluated, the fit indices indicate that the single-factor structure of the Teacher Self-Efficacy Scale fits the data. The factor loading values of all items in the scale are above 0.30. Thus, it can be interpreted that all items serve their purposes.

In addition, Figure 8 illustrates the measurement model that was obtained from the analysis results.

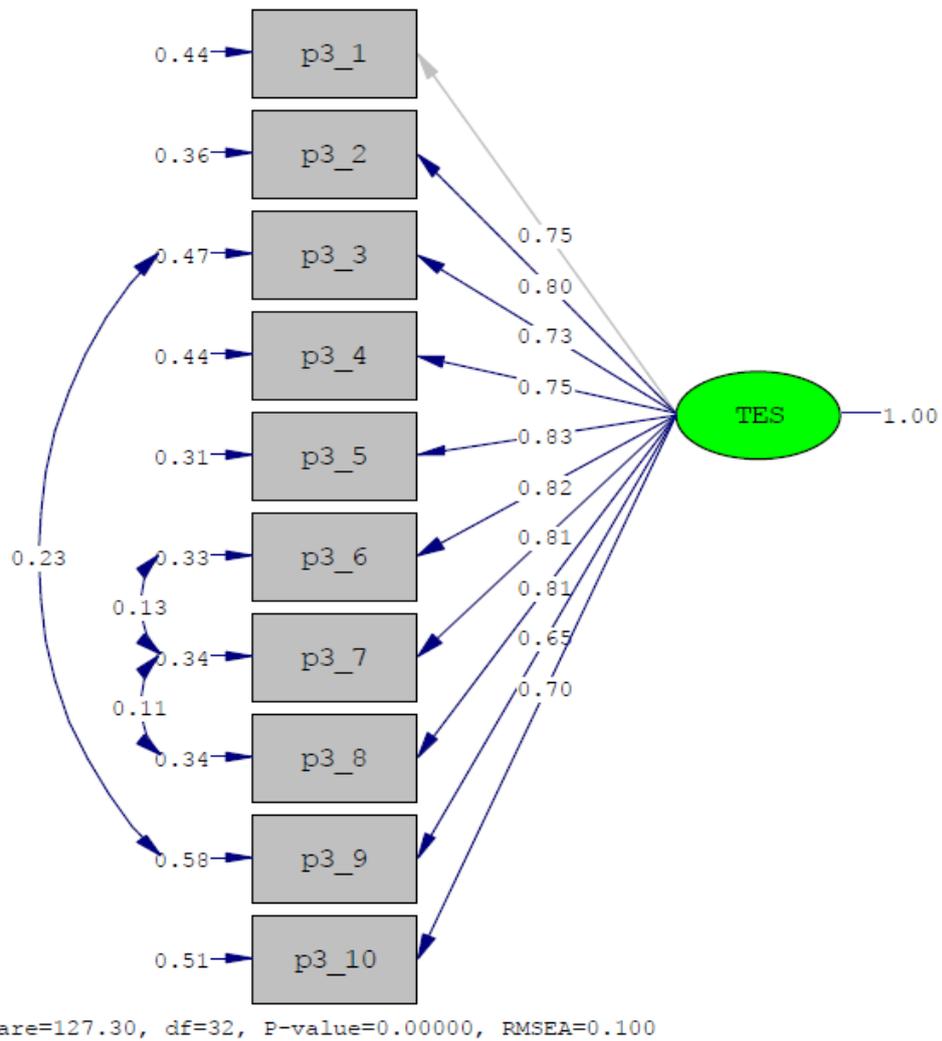


Figure 8. Measurement Model of the Teacher Self-efficacy Scale

In order to ascertain the item distinctiveness of the TES, scale scores were sorted from highest to lowest, with the top 27% categorized as the upper group and the bottom 27% as the lower group. The differences between items in the lower and upper groups were examined using a t-test. Additionally, corrected item-total score correlations were calculated. The results are presented in Table 9.

Table 9

Results of the TES' Item Analysis

Item No	Corrected Item-Total Correlation	Upper Group		Lower Group		t
		\bar{X}	ss	\bar{X}	ss	
1	0.71	5.46	0.69	2.85	1.17	17.218
2	0.76	5.80	0.49	3.19	1.29	17.142
3	0.73	5.30	0.81	3.05	1.13	14.543
4	0.70	5.59	0.67	3.15	1.16	16.410
5	0.78	5.86	0.38	3.36	1.41	15.467
6	0.81	5.67	0.67	3.22	1.15	16.513
7	0.81	5.59	0.61	3.19	1.03	18.168
8	0.80	5.51	0.61	3.15	1.05	17.439
9	0.66	5.38	0.77	3.09	1.07	15.649
10	0.67	5.43	0.91	3.11	1.24	13.559

p<0.05

Upon examination of Table 7, it can be observed that the corrected item-total score correlations for the items in the TES range from 0.66 to 0.81. The calculated item-total score correlations for the scale being higher than 0.30 indicate the validity of each item. Significant differences were found for all items between the upper and lower groups according to the results of the t-test ($p < 0.05$). Thus, it can be said that the items in the scale are successful in distinguishing individuals in the lower group from those in the upper group. Additionally, the Cronbach's alpha value for the scale is presented in Table 10.

Table 10

Cronbach's alpha value of the TES

	The Number of Items	Cronbach's Alpha Value
Teacher Self-Efficacy Scale	10	0.94

Table 10 illustrates that the Cronbach's alpha values for the Teacher Efficacy Scale scores are 0.94. Since Cronbach's alpha values exceed 0.80, it can be said that the measurements obtained have high reliability.

3.3.2.3. Teacher autonomy scale

The last scale in the instrument is Teacher Autonomy Scale (TAS) developed by Pearson and Moomaw (2006) to validate the factor structure established in prior research (Pearson and Hall, 1993, as cited in Pearson and Moomaw, 2006). This scale, which consists of 18 items and rates them on a 4-point Likert scale.

Within this scale, the first 6 items are related to curriculum autonomy, which revolves around the autonomy of the teacher in terms of curriculum and instructional decisions along with their level of influence over the content, goals, objectives, and materials used in their classes. The items 7 to 18 are associated with general teaching autonomy, which includes their degree of freedom and control in areas such as teaching creativity, student-learning activity selection, classroom behavior standards, discretion in decision-making, time management, use of alternative procedures, following personal guidelines, solving major problems, classroom space usage, choice of evaluation and assessment activities, and selection of teaching methods and strategies.

The TAS was administered to 300 teachers, confirming the scale's consistent factors. Although focused on item consistency, the study demonstrated the logical alignment of the items with existing literature, suggesting their potential utility for future researchers studying autonomy. This scale was employed in several studies (Dilekçi, 2022; Hosseinzadeh and Baradaran, 2015; Lepine, 2007; Myers, 2021) and it was concluded that this scale was appropriate to measure teacher autonomy. It is also composed of two factors. As a consequence, this scale is found appropriate to use within the scope of the current study.

Table 11 illustrates the results of Mardia test for TAS below.

Table 11

Results of Mardia Test for TAS

Variable	min	max	skew	c.r.	Kurtosis	c.r.
p4_7	1.000	4.000	-.634	-4.488	1.037	3.671
p4_8	1.000	4.000	-.262	-1.857	.067	.237
p4_9	1.000	4.000	-.229	-1.625	.489	1.732
p4_10	1.000	4.000	.301	2.133	-.521	-1.845
p4_11	1.000	4.000	-.259	-1.832	.001	.005
p4_12	1.000	4.000	.303	2.145	-.258	-.914
p4_13	1.000	4.000	-.295	-2.089	.327	1.157
p4_14	1.000	4.000	.072	.513	-.298	-1.056
p4_15	1.000	4.000	.247	1.747	-.463	-1.639
p4_16	1.000	4.000	.117	.829	-.602	-2.132
p4_17	1.000	4.000	-.257	-1.821	-.239	-.846
p4_18	1.000	4.000	.216	1.530	-.416	-1.475
p4_1	1.000	4.000	-.500	-3.542	.688	2.437
p4_2	1.000	4.000	.071	.506	-.443	-1.570
p4_3	1.000	4.000	.061	.432	-.484	-1.715
p4_4	1.000	4.000	.028	.199	-.605	-2.142
p4_5	1.000	4.000	-.456	-3.229	.450	1.593
p4_6	1.000	4.000	-.008	-.054	-.522	-1.849
Multivariate					75.137	24.291

As mentioned before, the robust maximum likelihood estimation was used during the CFA due to the failure to meet the assumption of multivariate normality.

The results of confirmatory factor analysis for TAS are illustrated in Table 12 below:

Table 12

Factor Analysis Results of TAS

								Factor Loading Values		Error Variances	
	χ^2	χ^2/sd	p	CFI	NNFI	IFI	RMSEA	max	min	max	min
Scale	545	4.16	0.00	0.92	0.90	0.99	0.103	0.8	0.3	0.8	0.2
Proposed	.15	$\chi^2/sd \leq 3$		≥ 0.9	≥ 0.9	≥ 0.9	≤ 0.080	$\geq 0,30$		$\leq 0,90$	

As a result of the factor analysis, it is observed that the χ^2/df value is between 3 and 5, indicating a moderate fit of the model to the data. The CFI value is 0.92, NNFI value is 0.90, and IFI value is determined as 0.92. These values being above 0.90 imply a very good fit of the model to the data (Tabachnick et al., 2013). Evaluated in terms of the RMSEA index, it is found that this index is 0.103 for the model, indicating a poor fit to the data since it falls between 0.080 and 0.10 (Brown, 2006, as cited in Çokluk et al., 2010). When the fit indices are considered overall, it is seen that the two-factor structure of the TAS fits the data. The factor loadings of all items on the scale are higher than 0.30. Therefore, all items are suitable for data analysis.

To determine the item distinctiveness of TAS, scale scores were sorted from highest to lowest, with the top 27% categorized as the upper group and the bottom 27% as the lower group. Differences between items in the upper and lower groups were examined using a t-test. Figure 9 demonstrates it below.

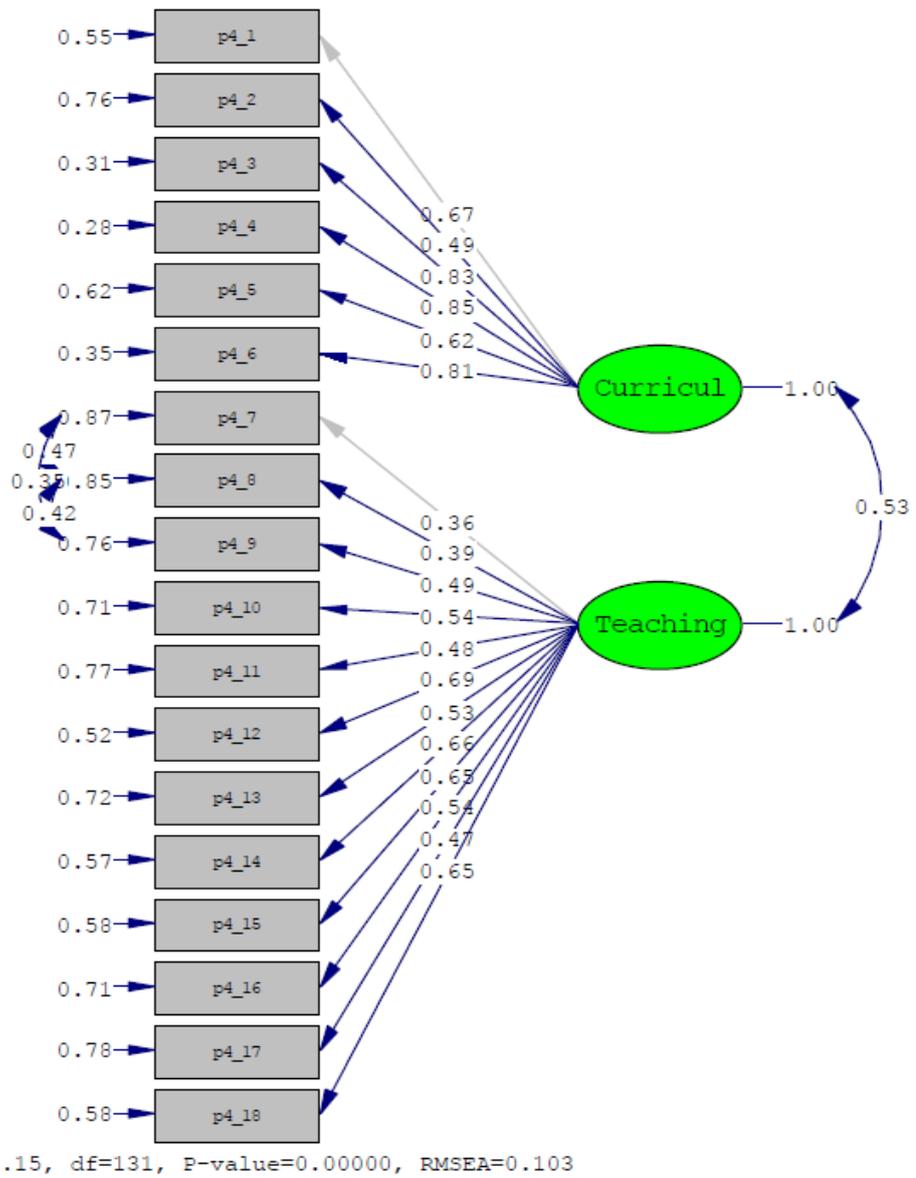


Figure 9. Measurement Model of the Teacher Autonomy Scale

Subsequently, corrected item-total score correlations have been calculated. The results are presented in Table 13.

Table 13

TAS' Item Analysis Results

	Item No	Corrected Item-Total Correlation	Upper Group		Lower Group		t
			\bar{X}	Ss	\bar{X}	Ss	
Curriculum autonomy	1	0,64	3.63	0.49	2.41	0.67	13.334
	2	0,46	3.27	0.73	2.36	0.62	8.629
	3	0,73	3.47	0.55	1.94	0.46	19.278
	4	0,75	3.53	0.59	1.85	0.45	20.285
	5	0,59	3.68	0.47	2.51	0.65	13.105
	6	0,75	3.51	0.59	2.01	0.51	17.138
	7	0,43	3.56	0.52	2.72	0.69	8.690
	8	0,47	3.56	0.50	2.73	0.61	9.414
	9	0,54	3.57	0.52	2.72	0.62	9.478
	10	0,46	3.10	0.78	2.21	0.54	8.395
General teaching autonomy	11	0,49	3.44	0.57	2.52	0.59	10.122
	12	0,59	3.11	0.71	1.91	0.60	11.656
	13	0,54	3.51	0.55	2.60	0.63	9.729
	14	0,56	3.12	0.66	2.23	0.62	8.854
	15	0,54	3.10	0.80	1.89	0.61	10.807
	16	0,42	3.01	0.86	1.99	0.72	8.250
	17	0,46	3.49	0.59	2.54	0.67	9.540
	18	0,55	3.21	0.68	2.09	0.55	11.501

p<0.05

Table 13 displays the corrected item-total score correlation values, and it is indicated that the corrected item-total score correlation values for the first factor of this scale range between 0.46 and 0.75, and for the second factor, they range between 0.42 and 0.59. Calculated item-total score correlations for this scale exceeding 0.30 indicate the validity of each item (Çokluk et al., 2010). Significant differences were found between the upper and lower groups for all items according to the t-test results ($p < 0.05$). Thus, it can be concluded that the items in the scale are successful in distinguishing individuals in the lower group from those in the upper group.

Furthermore, Figure 10 displays the scale's Cronbach's alpha value.

	The Number of Items	Cronbach's Alpha Value
Curriculum autonomy	6	0.86
General teaching autonomy	12	0.84

Figure 10. Cronbach's alpha value of the Teacher Autonomy Scale

Upon examining Figure 10, Cronbach's alpha values of 0.86 were determined for the first factor scores of the scale, and 0.84 for the second factor scores. Since the Cronbach's alpha values are higher than 0.80 (Salvucci et al., 1997), it can be said that the obtained measurements have high reliability.

Overall, each of the three scales employed in the study has been found to be reliable based on reliability coefficients, or Cronbach's Alpha, and valid based on the confirmatory factor analysis.

3.4. Data Analysis

Data were collected quantitatively in this study, as a result, numerous statistical analyses were conducted, and data were performed through Statistical Package for Social Sciences (SPSS) 25 and LISREL 8.7. Firstly, validity and reliability of the scales were conducted to assess whether the data followed a normal distribution before conducting statistical analysis on the data. To this end, skewness and kurtosis values were examined initially, and the results are presented in Table 14, Table 15, and Table 16 respectively for each scale.

Table 14

Results of the Normality Analysis for DT Scores

	N	Skewness		Kurtosis		
		Statistic	Statistic	Std. Error	Std. Error	
DIGIGLO Tool	PE	301	-.089	.140	-.333	.280
	DR	301	-.264	.140	-.432	.280
	TL	301	-.078	.140	-.739	.280
	A	301	-.021	.140	-.399	.280
	EL	301	-.100	.140	-.462	.280
	FLDC	301	.407	.140	-.208	.280
	DE	301	.415	.140	-.148	.280
	EDE	301	.453	.140	-.335	.280

When Table 14 is examined, it can be seen that the skewness values for the scale scores of DT range from -.264 to .453, and the kurtosis values range from -.739 to -.148. When examining the table for each factor, skewness value is -.089 and kurtosis value is -.333 for PE factor; skewness value is -.264 and kurtosis value is -.432 for DR factor; skewness value is -.078 and kurtosis value is -.789 for TL factor; skewness value is -.021 and kurtosis factor is -.399 for A factor; skewness value is -.100 and kurtosis value is -.462 for EL factor; skewness value is .407 and kurtosis value is -.208 for FLDC factor; skewness value is .415 and kurtosis factor is -.148 for DE factor; skewness value is .453 and kurtosis value is -.335 for EDE factor. Skewness and kurtosis values between -2 and +2 indicate that the measurements exhibit a normal distribution (George and Mallery, 2010). The values of skewness and kurtosis for each factor in the scale are between -2 and +2. Consequently, it can be said that the scale scores exhibit a normal distribution.

Table 15

Results of the Normality Analysis for TES Scores

	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Teacher Efficacy Scale	301	-1.187	.140	1.249	.280

According to Table 15, skewness value is -1.187 while kurtosis value is 1.249 . As skewness and kurtosis values between -2 and $+2$ indicate that the measurements exhibit a normal distribution (George and Mallery, 2010), TES scores illustrate a normal distribution.

Table 16

Results of the Normality Analysis for TAS Scores

		N	Skewness		Kurtosis	
		Statistic	Statistic	Std. Error	Statistic	Std. Error
Teacher Autonomy Scale (TAS)	Curriculum Autonomy (CA)	301	.270	.140	.116	.280
	General Teaching Autonomy (GTA)	301	.924	.140	1.667	.280

According to Table 16, skewness value is $.270$ and kurtosis value is $.116$ for CA factor, whereas skewness value is $.924$ and kurtosis value is 1.667 for GTA factor in TAS scores. As these values are between -2 and $+2$ (George and Mallery, 2010), TAS scores demonstrate a normal distribution.

In the study, the digital competencies of English teachers were measured using the DT, which has eight sub-factors, resulting in eight different multiple regression analysis models. For regression analysis, assumptions regarding linear relationships and multicollinearity among variables were also examined.

Scatterplot diagrams of standardized residuals and standardized predicted values were analyzed to check whether the relationship between predictor variables and the dependent

variable was linear. Variance Inflation Factor (VIF) values were examined to assess multicollinearity. In Figure 11, scatterplot diagram is illustrated.

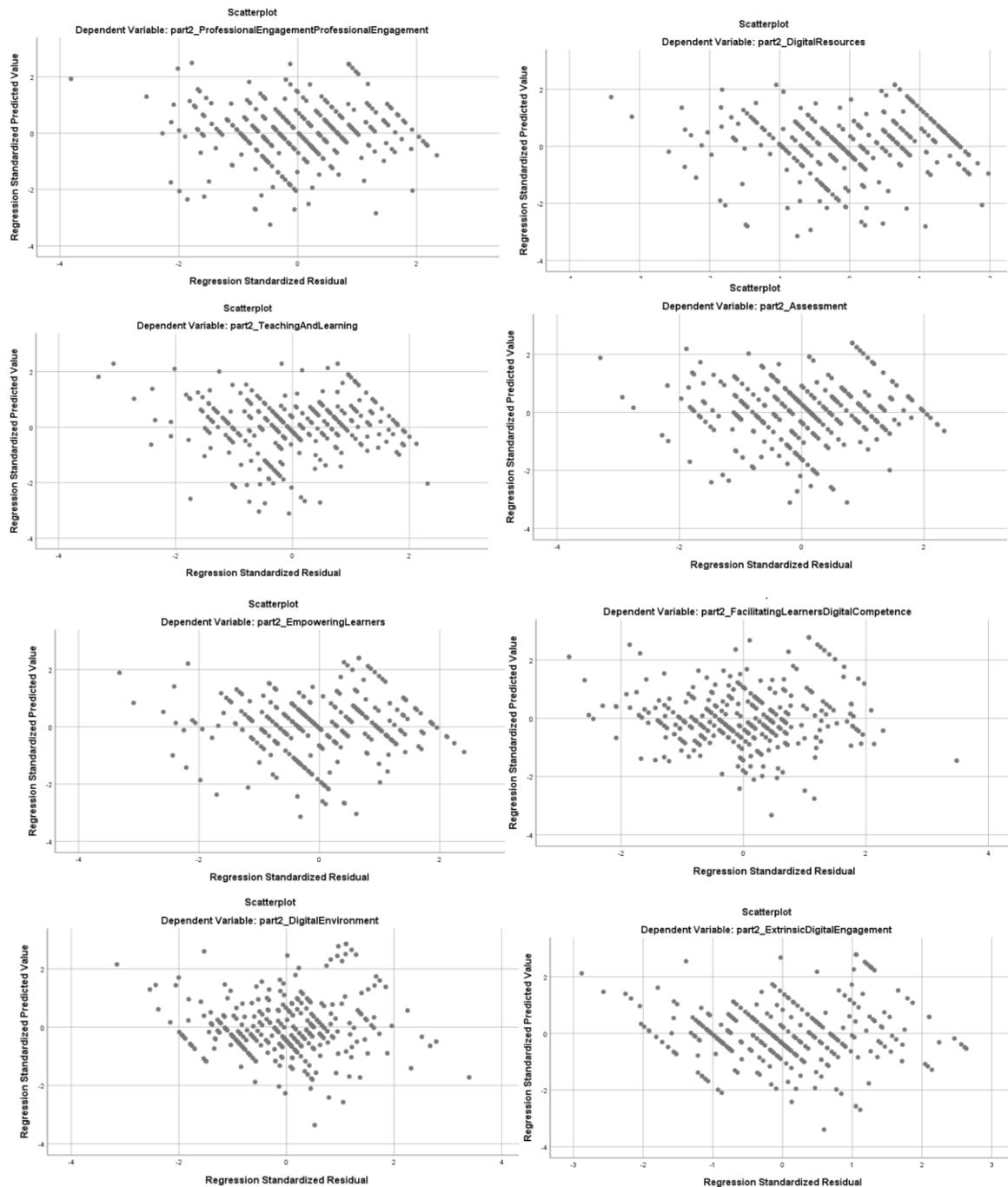


Figure 11. Scatterplot Diagram

The scatterplot diagrams indicated a linear relationship, with points tending to cluster around a central axis. Since the VIF values were less than 10 (Çokluk et al., 2012), no

multicollinearity problem was detected. Once the assumptions for regression analysis were met, the regression analysis was performed.

Table 17 illustrates which test was performed for each question below:

Table 17

Research questions and statistical tests run

Research questions	Statistical tests
Q1. To what extent can EFL teachers' digital competence be predicted by their teaching self-efficacy and their autonomy levels?	Pearson correlation analysis Multiple regression analysis
Q.1.1. To what extent can EFL teachers' digital competence regarding professional engagement factor be predicted by their teaching self-efficacy and their autonomy levels?	Regression analysis
Q.1.2. To what extent can EFL teachers' digital competence regarding digital resources factor be predicted by their teaching self-efficacy and their autonomy levels?	Regression analysis
Q.1.3. To what extent can EFL teachers' digital competence regarding teaching and learning factor be predicted by their teaching self-efficacy and their autonomy levels?	Regression analysis
Q.1.4. To what extent can EFL teachers' digital competence regarding assessment factor be predicted by their teaching self-efficacy and their autonomy levels?	Regression analysis Regression analysis
Q.1.5. To what extent can EFL teachers' digital competence regarding empowering learners factor be predicted by their teaching self-efficacy and their autonomy levels?	Regression analysis
Q.1.6. To what extent can EFL teachers' digital competence regarding facilitating learners' digital competence factor be predicted by their teaching self-efficacy and their autonomy levels?	Regression analysis
Q.1.7. To what extent can EFL teachers' digital competence regarding digital environment factor be predicted by their teaching self-efficacy and their autonomy levels?	Regression analysis

Q.1.8. To what extent can EFL teachers' digital competence Regression analysis regarding extrinsic digital engagement factor be predicted by their teaching self-efficacy and their autonomy levels?

The results are shown in detail in the following chapter.

CHAPTER IV

FINDINGS

This chapter presents the findings of quantitative data of the study. The first section presents the findings regarding the problem that examines the relationship among self-efficacy, digital competence, and teacher autonomy of teachers. The second section presents the findings related to the sub-problems that explore the relationships among eight factors within digital competence, self-efficacy, and autonomy levels of teachers.

4.1. The findings regarding the problem

4.1.1. To what extent can EFL teachers' digital competence be predicted by their teaching self-efficacy and their autonomy levels?

The first research question aimed to investigate the relationship between digital competence and the levels of self-efficacy and teacher autonomy among teachers. To this end, a Pearson correlation analysis and multiple regression analysis were conducted. Table 18 presents the correlation analysis results, and Tables through 19 and 26 present the the results of multiple regression analysis.

Table 18

Pearson Correlation Analysis of the Relationship among the Factors in Scales (N=301)

	1	2	3	4	5	6	7	8	9	10	11
1. PE	1										
2. DR	.62**	1									
3. TL	.63**	.67**	1								
4. A	.59**	.62**	.63**	1							
5. EL	.66**	.62**	.65**	.74**	1						
6. FLDC	.47**	.44**	.53**	.55**	.65**	1					
7. DE	.37**	.34**	.40**	.51**	.50**	.58**	1				
8. EDE	.34**	.32**	.39**	.47**	.50**	.57**	.81**	1			
9. TES	.37**	.37**	.39**	.40**	.42**	.36**	.30**	.32**	1		
10. CA	.18**	.19**	.22**	.26**	.26**	.37**	.34**	.29**	.24**	1	
11. GTA	.30**	.26**	.29**	.28**	.30**	.40**	.35**	.34**	.25**	.57**	1

* $p < 0.05$; ** $p < 0.01$

A Pearson correlation analysis was conducted to explore the relationship among digital competence, teacher self-efficacy and teacher autonomy. An examination of Table 13 reveals that there are moderately positive and statistically significant ($p < 0.05$) relationships between the scores on the DIGIGLO Tool (DT) factors (PE, DR, TL, A, EL, FLDC, DE, EDE) and the Teacher Efficacy Scale (TES) scores ($r = 0.37, 0.37, 0.39, 0.40, 0.42, 0.36, 0.30, 0.32$, respectively). This indicates that as TES scores increase, DT scores also increase. In other words, as English teachers' levels of teacher efficacy rise, their levels of digital competence also increase.

Additionally, there are low to moderate positive and statistically significant ($p < 0.05$) relationships between the scores on the DT factors and the curriculum autonomy (CA) subscale of the Teacher Autonomy Scale (TAS) ($r = 0.18, 0.19, 0.22, 0.26, 0.26, 0.37, 0.34, 0.29$, respectively). This suggests that as the CA scores on the TAS increase, the DT

scores also increase. In other words, as English teachers' levels of CA rise, their levels of digital competence increase.

Similarly, low to moderate positive and statistically significant ($p < 0.05$) relationships were found between the scores on the DT factors and the general teaching autonomy (GTA) subscale of the TAS ($r = 0.30, 0.26, 0.29, 0.28, 0.30, 0.40, 0.35, 0.34$, respectively). This indicates that as the GTA scores on the TAS increase, the DT scores also increase. In other words, as English teachers' levels of GTA rise, their levels of digital competence increase.

Furthermore, low positive and statistically significant ($p < 0.05$) relationships were found between the TES scores and the CA ($r = 0.24$) and GTA ($r = 0.25$) subfactors of the TAS. This suggests that as the CA and GTA scores on the TAS increase, the TES scores also increase. In other words, as English teachers' levels of curriculum autonomy and general teaching autonomy rise, their levels of self-efficacy also increase.

4.2. The findings regarding the sub-problems

4.2.1. To what extent can EFL teachers' digital competence regarding professional engagement factor be predicted by their teaching self-efficacy and their autonomy levels?

A multiple regression analysis was conducted to determine the extent to which the scores on the Teacher Efficacy Scale and the Teacher Autonomy Scale predict the scores on the DIGIGLO Tool Scale. Since the DIGIGLO Tool Scale has eight sub-factors, eight different multiple regression analysis models were established. The results for each sub-factor are presented respectively in Tables between 19 and 26.

Table 19

The Influence of Teacher Self-efficacy and Teacher Autonomy on Factor PE of DT

Model		B	Beta	t	Sig.	R ²	Adj. R ²
	(Constant)	2.96		2.317	0.021	0.17	0.17
	TES	0.10	0.31	5.636	0.000		
Regression Analysis 1	CA	-0.01	- 0.01	-.172	0.864		
	GTA	0.14	0.22	3.417	0.001		
<i>Dependent variable: Professional Engagement; F(3, 297) = 20.951; p=0.000</i>							
	(Constant)	3.43		2.308	.022	0.16	0.15

As for the relationship among digital competence, self-efficacy and teacher autonomy of the participants, multiple regression analysis was administered as it allows a researcher to identify a relationship between a dependent variable and the most optimal combination of two or more independent variables (Fraenkel, et al., 2012). Consequently, multiple regression analysis was performed to determine the impact of teacher self-efficacy and teacher autonomy on digital competence. According to the analysis results, the first regression model, where the predictor variables are teacher efficacy, curriculum autonomy, and general teaching autonomy, and the dependent variable is professional engagement, is statistically significant ($p < 0.05$). The standardized regression coefficient from the TES scores to the PE factor scores is 0.31 and is statistically significant ($p < 0.05$). This indicates that a one standard unit increase in teacher efficacy scale scores leads to a 0.31 standard unit increase in PE factor scores.

The standardized regression coefficient from the curriculum autonomy factor scores to the professional engagement factor scores is -0.01 and is not statistically significant ($p > 0.05$). This suggests that teachers' levels of curriculum autonomy do not predict their digital competence in professional engagement.

The standardized regression coefficient from the general teaching autonomy factor scores to the PE factor scores is 0.22 and is statistically significant ($p < 0.05$). This indicates that a

one standard unit increase in general teaching autonomy scores leads to a 0.22 standard unit increase in PE factor scores.

When examining the explained variance, the predictor variables in the regression model together explain 17% of the variance in the professional engagement variable. In summary, it can be stated that English teachers' levels of teacher efficacy and general teaching autonomy predict their levels of professional engagement, whereas their levels of curriculum autonomy do not.

4.2.2. To what extent can EFL teachers' digital competence regarding digital resources

factor be predicted by their teaching self-efficacy and their autonomy levels?

The results of the multiple regression analysis regarding the relationship among teachers' self-efficacy, curriculum autonomy, general teaching autonomy, and digital resources factor in digital competence are illustrated below in Table 20.

Table 20

The Influence of Teacher Self-efficacy and Teacher Autonomy on Factor DR of DT

Model		B	Beta	t	Sig.	R ²	Adj. R ²
	(Constant)	3.43		2.308	.022	0.16	0.15
	Teacher Efficacy	0.12	0.34	6.046	.000		
Regression Analysis 2	Curriculum Autonomy	0.07	0.06	1.007	.315		
	General Teaching Autonomy	0.07	0.09	1.369	.172		
<i>Dependent variable: Digital Resources; F(3, 297) = 18.419; p=0.000</i>							

It was determined that the second regression model, where the predictor variables are teacher efficacy, curriculum autonomy, and general teaching autonomy, and the dependent variable is digital resources, is statistically significant ($p < 0.05$). The standardized

regression coefficient from the TES scores to the digital resources factor scores is 0.34 and is statistically significant ($p < 0.05$). This indicates that a one standard unit increase in teacher efficacy scale scores leads to a 0.34 standard unit increase in DR factor scores.

The standardized regression coefficient from the curriculum autonomy factor scores to the DR factor scores is 0.06 and is not statistically significant ($p > 0.05$). This suggests that teachers' levels of curriculum autonomy do not predict their digital competence in digital resources.

The standardized regression coefficient from the general teaching autonomy factor scores to the DR factor scores is 0.09 and is not statistically significant ($p > 0.05$). This indicates that teachers' levels of general teaching autonomy do not predict their digital competence in digital resources.

When examining the explained variance, the predictor variables in the regression model together explain 15% of the variance in the digital resources variable. In summary, it can be stated that English teachers' levels of teacher efficacy predict their levels of digital resources, whereas their levels of curriculum autonomy and general teaching autonomy do not.

4.2.3. To what extent can EFL teachers' digital competence regarding teaching and learning factor be predicted by their teaching self-efficacy and their autonomy levels?

The results of the multiple regression analysis regarding the relationship among teachers' self-efficacy, curriculum autonomy, general teaching autonomy, and teaching and learning factor in digital competence are illustrated below in Table 21.

Table 21

The Influence of Teacher Self-efficacy and Teacher Autonomy on Factor TL of DT

Model		B	Beta	T	Sig.	R ²	Adj. R ²
	(Constant)	4.27		2.441	.015	0.18	0.17
	Teacher Efficacy	0.15	0.34	6.249	.000		
Regression Analysis 3	Curriculum Autonomy	0.11	0.08	1.279	.202		
	General Teaching Autonomy	0.10	0.11	1.806	.072		

Dependent variable: Teaching and Learning; F(3, 297) = 21.803; p=0.000

As for the third regression model, where the predictor variables are teacher efficacy, curriculum autonomy, and general teaching autonomy, and the dependent variable is teaching and learning, is statistically significant ($p < 0.05$). The standardized regression coefficient from the TES scores to the TL factor scores is 0.34 and is statistically significant ($p < 0.05$). This indicates that a one standard unit increase in teacher efficacy scale scores leads to a 0.34 standard unit increase in teaching and learning factor scores.

The standardized regression coefficient from the curriculum autonomy factor scores to the TL factor scores is 0.08 and is not statistically significant ($p > 0.05$). This suggests that teachers' levels of curriculum autonomy do not predict their digital competence in teaching and learning.

The standardized regression coefficient from the general teaching autonomy factor scores to the TL factor scores is 0.11 and is not statistically significant ($p > 0.05$). This indicates that teachers' levels of general teaching autonomy do not predict their digital competence in teaching and learning.

When examining the explained variance, the predictor variables in the regression model together explain 17% of the variance in the teaching and learning variable. To sum up, it can be stated that English teachers' levels of teacher efficacy predict their levels of teaching and learning, whereas their levels of curriculum autonomy and general teaching autonomy do not.

4.2.4. To what extent can EFL teachers' digital competence regarding assessment factor

be predicted by their teaching self-efficacy and their autonomy levels?

The results of the multiple regression analysis regarding the relationship among teachers' self-efficacy, curriculum autonomy, general teaching autonomy, and assessment factor in digital competence are illustrated below in Table 22.

Table 22

The Influence of Teacher Self-efficacy and Teacher Autonomy on Factor A of DT

Model		B	Beta	T	Sig.	R ²	Adj. R ²
	(Constant)	1.43		1.066	.287	0.20	0.19
	Teacher Efficacy	0.12	0.34	6.276	.000		
Regression Analysis 4	Curriculum Autonomy	0.12	0.11	1.761	.079		
	General Teaching Autonomy	0.09	0.13	2.036	.043		
<i>Dependent variable: A; F(3, 297) = 24.635; p=0.000</i>							

The dependent variable, assessment, is statistically significant ($p < 0.05$) in the fourth regression model, where the predictor variables are teacher efficacy, curriculum autonomy, and general teaching autonomy. The standardized regression coefficient from the TES scores to the assessment factor scores is 0.34 and is statistically significant ($p < 0.05$). This indicates that a one standard unit increase in teacher efficacy scale scores leads to a 0.34 standard unit increase in assessment factor scores.

The standardized regression coefficient from the curriculum autonomy factor scores to the assessment factor scores is 0.11 and is not statistically significant ($p > 0.05$). This suggests that teachers' levels of curriculum autonomy do not predict their digital competence in assessment.

The standardized regression coefficient from the general teaching autonomy factor scores to the assessment factor scores is 0.13 and is statistically significant ($p < 0.05$). This indicates that a one standard unit increase in general teaching autonomy scores leads to a 0.13 standard unit increase in assessment factor scores.

When examining the explained variance, the predictor variables in the regression model together explain 19% of the variance in the assessment variable. In short, it can be stated that English teachers' levels of teacher efficacy and general teaching autonomy predict their levels of assessment, whereas their levels of curriculum autonomy do not.

4.2.5. To what extent can EFL teachers’ digital competence regarding empowering learners factor be predicted by their teaching self-efficacy and their autonomy levels?

The results of the multiple regression analysis regarding the relationship among teachers’ self-efficacy, curriculum autonomy, general teaching autonomy, and empowering learners factor in digital competence are illustrated below in Table 23.

Table 23

The Influence of Teacher Self-efficacy and Teacher Autonomy on Factor EL of DT

Model		B	Beta	T	Sig.	R ²	Adj. R ²
	(Constant)	1.66		1.297	.196	0.22	0.22
	Teacher Efficacy	0.12	0.36	6.788	.000		
Regression Analysis 5	Curriculum Autonomy	0.09	0.09	1.458	.146		
	General Teaching Autonomy	0.10	0.15	2.511	.013		

Dependent variable: Empowering Learners; F(3, 297) = 28.396; p=0.000

The fifth regression model, where the predictor variables are teacher efficacy, curriculum autonomy, and general teaching autonomy, and the dependent variable is empowering learners, was found to be statistically significant ($p < 0.05$). The standardized regression coefficient from the TES scores to the EL factor scores is 0.36 and is statistically significant ($p < 0.05$). This indicates that a one standard unit increase in teacher efficacy scale scores leads to a 0.36 standard unit increase in EL factor scores.

The standardized regression coefficient from the curriculum autonomy factor scores to the EL factor scores is 0.09 and is not statistically significant ($p > 0.05$). This suggests that teachers’ levels of curriculum autonomy do not predict their digital competence in empowering learners.

The standardized regression coefficient from the general teaching autonomy factor scores to the empowering learners factor scores is 0.15 and is statistically significant ($p < 0.05$).

This indicates that a one standard unit increase in general teaching autonomy scores leads to a 0.15 standard unit increase in empowering learners factor scores.

When examining the explained variance, the predictor variables in the regression model together explain 22% of the variance in the empowering learners variable. In conclusion, it can be stated that English teachers' levels of teacher efficacy and general teaching autonomy predict their levels of empowering learners, whereas their levels of curriculum autonomy do not.

4.2.6. To what extent EFL teachers’ digital competence regarding facilitating learners’

digital competence factor be predicted by their teaching self-efficacy and their autonomy

levels?

The results of the multiple regression analysis regarding the relationship among teachers’ self-efficacy, curriculum autonomy, general teaching autonomy, and facilitating learners’ digital competence factor in digital competence are illustrated below in Table 24.

Table 24

The Influence of Teacher Self-efficacy and Teacher Autonomy on Factor FLDC of DT

Model		B	Beta	t	Sig.	R ²	Adj. R ²
Regression Analysis 6	(Constant)	-2.47		-1.209	.228	0.25	0.24
	Teacher Efficacy	0.14	0.26	4.861	.000		
	Curriculum Autonomy	0.32	0.20	3.242	.001		
	General Teaching Autonomy	0.23	0.22	3.568	.000		
<i>Dependent variable: Facilitating Learners’ Digital Competence; F(3, 297) = 32.552; p=0.000</i>							

The sixth regression model, where the predictor variables are teacher efficacy, curriculum autonomy, and general teaching autonomy, and the dependent variable is facilitating learners’ digital competence, was found to be statistically significant ($p < 0.05$). The standardized regression coefficient from the TES scores to the FLDC factor scores is 0.26 and is statistically significant ($p < 0.05$). This indicates that a one standard unit increase in teacher efficacy scale scores leads to a 0.26 standard unit increase in FLDC factor scores.

The standardized regression coefficient from the curriculum autonomy factor scores to the facilitating learners’ digital competence factor scores is 0.20 and is statistically significant

($p < 0.05$). This indicates that a one standard unit increase in curriculum autonomy factor scores leads to a 0.20 standard unit increase in FLDC factor scores.

The standardized regression coefficient from the general teaching autonomy factor scores to the FLDC factor scores is 0.22 and is statistically significant ($p < 0.05$). This indicates that a one standard unit increase in general teaching autonomy scores leads to a 0.22 standard unit increase in FLDC factor scores.

When examining the explained variance, the predictor variables in the regression model together explain 24% of the variance in the facilitating learners' digital competence variable. To conclude, it can be stated that English teachers' levels of teacher efficacy, curriculum autonomy, and general teaching autonomy predict their levels of facilitating learners' digital competence.

4.2.7. To what extent can EFL teachers' digital competence regarding digital environment

factor be predicted by their teaching self-efficacy and their autonomy levels?

The results of the multiple regression analysis regarding the relationship among teachers' self-efficacy, curriculum autonomy, general teaching autonomy, and digital environment factor in digital competence are illustrated below in Table 25.

Table 25

The Influence of Teacher Self-efficacy and Teacher Autonomy on Factor DE of DT

Model		B	Beta	t	Sig.	R ²	Adj. R ²
	(Constant)	-2.94		-1.294	.197	0.20	0.19
	Teacher Efficacy	0.11	0.19	3.581	.000		
Regression Analysis 7	Curriculum Autonomy	0.32	0.18	2.879	.004		
	General Teaching Autonomy	0.26	0.22	3.588	.000		

Dependent variable: Digital Environment; $F(3, 297) = 24.929$; $p = 0.000$

The seventh regression model, where the predictor variables are teacher efficacy, curriculum autonomy, and general teaching autonomy, and the dependent variable is digital environment, was found to be statistically significant ($p < 0.05$). The standardized regression coefficient from the TES scores to the digital environment factor scores is 0.19 and is statistically significant ($p < 0.05$). This indicates that a one standard unit increase in TES scores leads to a 0.19 standard unit increase in DE factor scores.

The standardized regression coefficient from the curriculum autonomy factor scores to the DE factor scores is 0.18 and is statistically significant ($p < 0.05$). This indicates that a one standard unit increase in curriculum autonomy factor scores leads to a 0.18 standard unit increase in DE factor scores.

The standardized regression coefficient from the general teaching autonomy factor scores to the digital environment factor scores is 0.22 and is statistically significant ($p < 0.05$). This indicates that a one standard unit increase in general teaching autonomy scores leads to a 0.22 standard unit increase in DE factor scores.

When examining the explained variance, the predictor variables in the regression model together explain 19% of the variance in the digital environment variable. In sum, it can be stated that English teachers' levels of teacher efficacy, curriculum autonomy, and general teaching autonomy predict their levels of digital environment.

4.2.8. To what extent can EFL teachers' digital competence regarding extrinsic digital engagement factor be predicted by their teaching self-efficacy and their autonomy levels?

The results of the multiple regression analysis regarding the relationship among teachers' self-efficacy, curriculum autonomy, general teaching autonomy, and extrinsic digital engagement factor in digital competence are illustrated below in Table 26.

Table 26

The Influence of Teacher Self-efficacy and Teacher Autonomy on Factor EDE of DT

Model		B	Beta	t	Sig.	R ²	Adj. R ²
	(Constant)	-2.22		-1.501	.134	0.19	0.18
	Teacher Efficacy	0.09	0.24	4.330	.000		
Regression Analysis 8	Curriculum Autonomy	0.14	0.12	1.936	.054		
	General Teaching Autonomy	0.16	0.22	3.449	.001		

Dependent variable: Extrinsic Digital Engagement; F(3, 297) = 22.683; p=0.000

The eighth regression model was shown to be statistically significant ($p < 0.05$) for the dependent variable, extrinsic digital engagement (EDE), and the predictor variables, teacher efficacy, curriculum autonomy (CA), and general teaching (GTA) autonomy. The standardized regression coefficient from the TES scores to the extrinsic digital engagement factor scores is 0.24 and is statistically significant ($p < 0.05$). This indicates that a one standard unit increase in TES scores leads to a 0.24 standard unit increase in EDE factor scores.

The standardized regression coefficient from the CA factor scores to the EDE factor scores is 0.12 and is not statistically significant ($p > 0.05$). This suggests that teachers' levels of curriculum autonomy do not predict their digital competence in extrinsic digital engagement.

The standardized regression coefficient from the GTA factor scores to the EDE factor scores is 0.16 and is statistically significant ($p < 0.05$). This indicates that a one standard unit increase in GTA scores leads to a 0.16 standard unit increase in EDE factor scores.

When examining the explained variance, the predictor variables in the regression model together explain 18% of the variance in the extrinsic digital engagement variable. In summary, it can be stated that English teachers' levels of teacher efficacy and general teaching autonomy predict their levels of extrinsic digital engagement, whereas their levels of curriculum autonomy do not.

CHAPTER V

DISCUSSION, CONCLUSION AND IMPLICATIONS

This chapter discusses the relationship among digital competence, self-efficacy, and teacher autonomy of secondary school EFL teachers. In addition, it examines to what extent teachers' digital competence, according to specific areas identified in digital competence scale - professional engagement, digital resources, teaching and learning, assessment, empowering learners, facilitating learners' digital competence, digital environment, and extrinsic digital engagement- is predicted by their self-efficacy and autonomy. Subsequently, this chapter concludes all the results of the study. Finally, it offers the suggestions for further studies and pedagogical implications.

5.1. Discussion and conclusion

5.1.1. The discussion of the problem and conclusion

5.1.1.1. To what extent can EFL teachers' digital competence be predicted by their teaching self-efficacy and their autonomy levels?

To investigate the relationship among digital competence, self-efficacy, and teacher autonomy of the EFL teachers, the study applied an online questionnaire, and it was made up of three scales, namely, DIGIGLO Tool (Alarcón et al., 2020), teacher efficacy scale (Hoy and Woolfolk, 1993), and teacher autonomy scale (Pearson and Moomaw, 2006). In this regard, a Pearson correlation analysis and multiple regression analysis were performed. According to Pearson correlation analysis, there are moderately positive and statistically significant relationships between the scores on the DIGIGLO Tool factors (PE, DR, TL, A, EL, FLDC, DE, EDE) and the Teacher Efficacy Scale (TES) scores. Consequently, as teachers' efficacy increases, their digital competence increases. Furthermore, a low to moderate positive relationship is found between DT factors and curriculum autonomy factor of TAS. Similarly, there is a low to moderate relationship

between DT factors and general teaching autonomy factor of TAS. In other words, as curriculum autonomy and general teaching autonomy increase, teachers' digital competence increases. In addition, a low positive significant relationship is found among TES scores and two factors of TAS. Overall, the results demonstrated that there was a moderate significant relationship among the digital competence, self-efficacy, and autonomy levels of the participants. The results, in line with the multiple regression analysis, are discussed in the following.

The relationships among the digital competence, general teaching autonomy, and curriculum autonomy of the participating teachers were found to be positively correlated. There is a lack of research investigating these variables together in the relevant literature. Therefore, studies that examined these variables in pairs are discussed in relation to the findings of the current study. Koçak and Karatepe (2022) also investigated the relationship between 21st-century skills and teachers' autonomy based on the factors such as gender, years of experience, school type, and educational level taught. In line with the findings of the current study, they found a positive correlation between teachers' autonomy and their 21st-century skills. However, other variables examined in the study showed no significant impact on teachers' 21st-century skills.

In a similar vein, Kameshwara et al. (2020) examined the impact of teachers' pedagogical autonomy on students' computer literacy in light of recent reforms in the Italian educational system. This study was conducted in 12 countries, including Italy. The results showed that teachers' pedagogical autonomy has a positive, yet not statistically significant, correlation with students' digital skills performance. Additionally, Italy was found to have the lowest score among the participating countries.

Additionally, the study by Andina et al. (2020) investigated the correlation between learner autonomy, digital competence, and writing achievement among 92 first-year EFL students enrolled in an intensive course program at a state university in Indonesia. The findings revealed a strong correlation between learner autonomy and writing achievement, and a moderate correlation between digital competence and writing achievement. Based on the findings, it is recommended that EFL writing teachers promote autonomous learning and integrate technology to enhance students' writing achievement. All in all, autonomy was found to have a positive impact on digital competence similar to the findings of the current study.

The current study revealed that there was a positively and statistically significant relationship between teachers' self-efficacy and the eight factors of digital competence. As a result, it can be inferred that as teachers' self-efficacy increases, their digital competence levels increase. On the other hand, Hickson (2016) investigated the relationship between teachers' self-efficacy and their competence to integrate digital tools in their teaching practice and he found no significant relationship between two variables in contrast to the current study.

Few studies have explored the relationship between self-efficacy and digital competence. Additionally, the majority of the studies involved pre-service teachers, who are not the focus of the current study (Arpacı, 2017; Galindo-Domínguez and Bezanilla, 2021; Gudmundsdottir and Hatlevik, 2018; Kaygısız and Balçıkanlı, 2021; Malykhin et al., 2021).

In parallel with the current study's findings, which reveal that increased teacher self-efficacy is associated with higher levels of digital competence, the research by Santi et al. (2020) also highlights a positive relationship between teachers' self-efficacy and their use of mobile technology in education. Their study, which surveyed 125 secondary school teachers, found that while teachers generally have high self-efficacy beliefs regarding their technology use, they perceive their access to technology as constrained by external factors such as resources, funding, and equipment.

Similarly, the study by Moltudal et al. (2019) indicates that teachers who are proficient with technology are more likely to articulate educational goals and establish clear expectations for ICT use in diverse situations. In contrast, teachers who are less confident with technology often adhere to strict guidelines when integrating digital tools into their teaching.

In line with the current study, the research conducted by Hatlevik (2017) revealed that self-efficacy is influenced by confidence in basic ICT skills. Consequently, it was concluded that teachers' beliefs in their ability to support online collaborative activities for students are directly related to their use of ICT in the classroom.

5.1.2. The discussion of the sub-problems

5.1.2.1. To what extent can EFL teachers' digital competence regarding professional engagement factor be predicted by their teaching self-efficacy and their autonomy levels?

When reviewing the literature, a lack of research was observed regarding exploring the interrelation among these constructs, the relevant research findings would be compared in terms of the relationship between digital competence and self-efficacy, as well as the relationship between digital competence and teacher autonomy for the first factor in the relevant scale. Notably, this scale (DT) has not been used in the literature before. Hence, the results of the current study are discussed based on the similar items or variables on the relevant research.

The results revealed that teachers used technology to interact with learners and teachers, exchange materials with their colleagues, and revise their teaching according to the scores on the first factor (PE). According to the first regression analysis, there is a significant relation between teacher efficacy and PE. In addition, the relation between general teaching autonomy (GTA) and PE is statistically significant. However, the relation between curriculum autonomy (CA) and PE is not significant statistically. As a result, teachers seem to utilize technology for interaction with both their colleagues and learners, exchanging materials, and revising their teaching practices.

Similar to the findings of the present study, Erdin (2021) examined the digital competence levels of EFL teachers in Turkish context employing a single-factor questionnaire that included items related to self-efficacy. However, the researcher did not discuss the results in accordance with their self-efficacy and he did not seek the influence of self-efficacy on digital competence. According to the study by Erdin (2021), teachers reported that they utilized technology for communicating with other teachers and learners. As a result, the present study's finding regarding technology use for interaction in PE factor is in accordance with the findings by Erdin (2021).

In line with this study, Hatlevik (2017) sought to investigate the link between teachers' utilization of technology and their self-efficacy. Using a single-factor questionnaire, the researcher examined how teachers' self-efficacy in their technological skills related to their ability to collaborate online. Hatlevik (2017) found a strong relation between teachers'

digital competence and self-efficacy, affirming that self-efficacy in ICT predicted teachers' engagement in online collaboration, strategies for evaluating information, and ICT usage. Consequently, the results of this study are in accordance with the current study in terms of teachers' utilization of ICT to collaborate with their learners and colleagues.

There is currently no research that has investigated the variables examined in the current study by employing three different scales for each variable. However, a recent study incorporated all these constructs using a single scale, although it had only a limited number of items addressing self-efficacy and teacher autonomy. In this regard, the results of the study by Mičić and Vračar (2023) were in line with the current study. In their study, Mičić and Vračar (2023) compared the digital competence of teachers before and after the Covid-19 pandemic. The study found a significant growth in pedagogical digital competence among teachers after the transition to online teaching, in contrast to the other factors. Notably, teacher self-efficacy was found to be correlated with pedagogical digital competence but not with the other factors. As for autonomy of teachers, collaboration was the sole significant correlate of the improvement in pedagogical digital competence. In parallel with the findings of Mičić and Vračar's study (2023), the present study indicates that teachers demonstrated a higher level of pedagogical digital competence as their self-efficacy levels and general teaching autonomy increased; however, their curriculum autonomy did not predict their digital competence.

Few studies, which have focused more on involving learners rather than teachers as participants, have addressed the relation between digital competence and self-efficacy (Arpacı, 2017; Castaño-Muñoz, Vuorikari, Costa, Hippe, and Kampylis, 2023; Galindo-Domínguez and Bezanilla, 2021; Katsarou, 2021; Mieg, Klieme, Barker, Bryan, Gibson, Rismondo, Römmer-Nosseck, Thiem, and Unterpertinger, 2023). As those studies recruited learners as participants, they are not in line with this study in terms of their scope.

In another study, McGarr and McDonagh (2021) conducted research on the digital competence and autonomy levels of pre-service teachers. The study found out that the participants demonstrated low digital competence in educational tasks though they used digital technologies frequently for everyday purposes. The results of this study were inconsistent with this current study since participating teachers scored higher regarding the first factor (PE). Nevertheless, the scale utilized in this current study included items related to digital competence in education rather than digital competence in daily life.

5.1.2.2. To what extent can EFL teachers' digital competence regarding digital resources factor be predicted by their teaching self-efficacy and their autonomy levels?

The results revealed that teachers used technology to evaluate and choose materials, adapting them, and managing materials of learners by respecting copyright based on the scores on the second factor (DR). According to the second regression analysis, there is a significant relation between teacher efficacy and DR. However, the relation among GTA, CA and DR is not significant statistically. This suggests that teachers' digital competence in selecting materials is significantly influenced by their self-efficacy levels. Teachers who have a strong belief in their ability to teach effectively are more likely to skillfully select and adjust digital materials in accordance with copyright laws. They feel confident in their ability to navigate and utilize digital resources efficiently. However, this competence is not influenced by their general teaching autonomy or curriculum autonomy. This indicates that even if teachers have the freedom to make decisions about their teaching methods and curriculum, it does not necessarily enhance their ability to select and use digital materials effectively. The key factor appears to be their confidence in their teaching capabilities rather than the level of autonomy they possess.

Erdirin investigated (2021) whether the digital competence of EFL Turkish teachers varied based on demographic factors. In parallel with the findings of the current study, the study illustrated that teachers of English reported themselves as proficient in exploring effective teaching resources. This similarity emphasizes how crucial it is for EFL teachers to be tech savvy in order to effectively navigate and utilize a variety of instructional resources.

In contrast, the results of study conducted by Hickson (2016) are not in parallel with this current study since the current study illustrates that as the self-efficacy of teachers increase, their use of digital resources increases. Yet, Hickson (2016) concluded that there was no significant relationship between teachers' integration of technology into classroom and their self-efficacy.

5.1.2.3. To what extent can EFL teachers' digital competence regarding teaching and learning factor be predicted by their teaching self-efficacy and their autonomy levels?

The results demonstrated that teachers utilized technology in their classroom practice, guiding learners, fostering collaboration among learners, and enabling them to interact with each other based on the scores on the third factor (TL). The third regression analysis illustrated that a notable relation exists between teacher efficacy and the third factor (TL). Nonetheless, the relation among GTA, CA, and TL is not statistically significant. In this vein, this result asserts that teachers extensively utilize technology for fulfilling their teaching objectives and promoting peers interaction among learners. These findings suggest that participating teachers are encouraged to use technology widely because they have confidence in their ability to teach, not because they have complete control over the curriculum or methods they choose to use. Increased self-efficacy leads to more proactive and effective use of technology by teachers to meet learning objectives and improve student peer connections, all of which contribute to a more engaging learning environment. Few studies scrutinized TL factor regarding digital competence in the literature. For instance, Mičić and Vračar (2023) uncovered that collaboration was the sole significant correlate of the improvement in pedagogical digital competence as for autonomy of teachers. In parallel with the findings of Mičić and Vračar's study (2023), the present study indicates that teachers demonstrated a higher level of pedagogical digital competence as their self-efficacy levels increased; however, their curriculum autonomy and general teaching autonomy did not predict their digital competence.

5.1.2.4. To what extent can EFL teachers' digital competence regarding assessment factor be predicted by their teaching self-efficacy and their autonomy levels?

The results indicated that teachers made use of technology for alternative assessment, analyzing critically, and providing feedback to learners based on the scores on the fourth factor (A). The fourth regression analysis illustrated that a notable relation exists among teacher efficacy, GTA and the fourth factor (A). This means that teachers who have a strong

belief in their teaching abilities and those who have the freedom to make decisions about their teaching methods are more likely to effectively use technology for assessment purposes. These teachers are adept at incorporating digital tools to evaluate student performance and provide timely feedback, enhancing the overall learning experience.

Nonetheless, the analysis showed that the relationship between Curriculum Autonomy (CA) and the Assessment factor (A) is not statistically significant. This suggests that the freedom to make decisions about the curriculum does not significantly influence teachers' use of technology in assessment and feedback.

In summary, these results indicate that it is primarily the teachers' self-efficacy and their autonomy in teaching methods, rather than curriculum design, that drive their use of technology for assessment. Teachers with higher self-efficacy and greater teaching autonomy are more likely to integrate digital tools in assessing student progress and delivering feedback, thereby utilizing technology to enhance their instructional practices.

In line with the current study's findings, according to Mičić and Vračar's study (2023), the items related to employing alternative assessment techniques had a higher mean score than the average. Additionally, teachers were reported to increase their digital competence regarding assessment after the pandemic. Thus, individuals with a higher level of ICT proficiency may be better equipped to engage in informed decision-making and critical thinking processes when assessing information in various contexts.

5.1.2.5. To what extent can EFL teachers' digital competence regarding empowering learners factor be predicted by their teaching self-efficacy and their autonomy levels?

The fifth factor included items regarding considering diverse tools according to various student profiles, utilizing alternative tools for individualized needs of learners, and inspiring motivation and fostering creativity of learners. The fifth regression analysis demonstrated that a notable relation exists among teacher efficacy, GTA and the fifth factor (EL). Nonetheless, the relation between CA, and EL is not statistically significant. In other words, this study illustrated that teachers' self-efficacy and general teaching autonomy predicted their digital competence whereas curriculum autonomy did not.

Specifically, Items 14, 15, 16 in this factor are related to enabling students to be involved in lessons more effectively with the help of digital tools. This suggests that participating teachers design their teaching strategies by considering the specific needs of their learners and enrich their pedagogical practices through the integration of technology.

Several studies addressed the use of alternative methods for the learners' involvement. In this regard, Mičić and Vračar (2023) indicated that teachers improved their general digital competence in relation to considering needs of learners after the pandemic.

Similarly, Hickson (2017) conducted a research to determine the link between self-efficacy and digital competence of teachers in the USA. The tool employed in this study was composed of some items similar to the current study. In this vein, the item that aimed to measure teachers' adjusting their teaching based on the proficiency of learners is similar to the factor EL. However, this study did not find a significant association between these variables.

5.1.2.6. To what extent can EFL teachers' digital competence regarding facilitating learners' digital competence factor be predicted by their teaching self-efficacy and their autonomy levels?

The sixth factor in the study included items related to material creation, Creative Commons, copyright issues, comprehensive digital information, technological problem-solving skills, technology risk awareness, and digital literacy. The results of the regression analysis indicated that teacher efficacy, general teaching autonomy, and curriculum autonomy predicted the digital competence of teachers. In other words, there is a significant association among TE, GTA, CA, and DC. This suggests a significant relationship among the variables examined in this study.

This indicates that teachers' confidence in their teaching abilities and their autonomy in teaching methods and curriculum design are crucial in effectively fostering digital skills in students. The results emphasize the importance of teachers' roles in improving learners' abilities to create digital materials, understand copyright and Creative Commons, and manage technology-related risks. There is a need to focus on equipping students with skills for technological problem-solving and raising awareness about digital risks to better prepare them for using digital tools critically. This suggests that learners' digital competence need to be enhanced more in these issues.

Based on the results, the study asserts that learners are required to be educated for the technology-related risks and teachers ought to raise awareness in learners regarding the issue of digital citizenship. Consequently, there is a clear demand for informing learners about the essential digital skills needed in the 21st century. In addition, teachers might have scored the related items low since they are not acquainted with the concepts such as copyright, Creative Commons, which are part of the items in the sixth factor. In this vein, this result aligns with McGarr and McDonagh's observation (2021) that only half of the participants in their studies knew what the concept of Creative Commons was.

There have been several studies in the literature that explored learners' digital competence. Given that the sixth factor examined in the current study pertains to digital competence in learners, it is relevant to discuss these previous studies.

For instance, Girgin (2010) designed an online classroom for students at a private school in Türkiye, focusing on enhancing their language proficiency through specific tasks. The findings indicated that students were eager to integrate their digital competence into the language learning process. Girgin (2010) suggests that digital tools boost motivation by allowing students to create personalized settings, express preferences, and monitor their progress. Additionally, online classrooms promote individual autonomy and peer assessment, underlying the importance of learners' digital competence in the learning environment.

In parallel with the findings of the current study, Rahimi, Berg, and Veen (2014) highlight the significance of students' active engagement in technology-based learning. They suggest that by affording students the opportunity to monitor their learning process and regulate their activities, technology facilitates the development of autonomous learners.

5.1.2.7. To what extent can EFL teachers' digital competence regarding digital environment factor be predicted by their teaching self-efficacy and their autonomy levels?

The seventh factor in the study encompassed items pertaining to the facilities, tools, and organizational strategies employed by institutions to cultivate digital competence. The

results of the regression analysis indicated that teacher efficacy, general teaching autonomy, and curriculum autonomy predicted the digital competence of teachers. In other words, there is a significant association among TE, GTA, CA, and DC. This suggests a significant relationship among the variables examined in this study.

Items 22 through 26 within this factor examine how institutional support and resources contribute to teachers' digital competence. The analysis highlights a gap in the availability of practical training for teachers. Specifically, there is a notable deficiency in organizing workshops that offer teachers hands-on experience with digital tools and technologies.

Consequently, it can be inferred that institutions are lack in arranging workshops that offer teachers hands-on experience. In this vein, this study suggests the need for organizing more facilities tailored to teachers' needs to enhance their professional development.

In line with the current study, Mičić and Vračar's (2023) study included items regarding factors pertaining to educational setting. This study revealed that digital competence levels of teachers increased notably after the pandemic. In the light of this result, it can be concluded that schools provide more necessary digital tools and facilities, particularly in response to the demand arising from the pandemic. The transition to remote teaching during and after the pandemic may have facilitated increased utilization of technology for educational purposes among both teachers and learners.

5.1.2.8. To what extent can EFL teachers' digital competence regarding extrinsic digital engagement factor be predicted by their teaching self-efficacy and their autonomy levels?

The eighth factor in the study included items related to hardware and software updates by the institutions annually, responsiveness of institutions to staff suggestions, and the availability of an IT department to support teachers. The results of the regression analysis indicated that teacher efficacy, general teaching autonomy, predicted the digital competence of teachers, on the other hand, curriculum autonomy did not demonstrate a significant association. In other words, there is a significant association among TE, GTA, and DC, while a notable link is not found between CA and DC.

Consequently, it can be concluded that institutions do not adequately update their technical equipment and lack collaboration with stakeholders and staff to address digital requirements. Additionally, many schools appear to lack IT departments to support teachers and learners and provide necessary tools.

In parallel with the items of this factor, Mićić and Vračar's study (2023) sought to address whether school administrators take into account the needs of schools, teachers, and learners while planning education process and if they consider feedback of teachers regarding technical supplies. Since the study compared the development of teachers digitally before and after the pandemic, concluding that remote teaching facilitated technological progress in schools. Consequently, it is possible to draw a similar conclusion as in the seventh factor. As schools encounter some constraints such as remote teaching, they are compelled to improve digitally and administrators may pay more attention to the demands of schools.

A study conducted during the pandemic period by Scanni (2022) also investigated the constraints encountered in remote teaching process. Most of the participants identified technical issues as the primary constraint during this period. As a result, one of the biggest obstacles to digital growth appears to be lack of technical supplies to meet demands of both teachers and learners.

5.1.3. Conclusion

Integrating digital tools into education is increasingly crucial to meet the demands of the 21st century. Furthermore, the utilization of digital tools can enhance the motivation and development of language learners while fostering collaboration among them. Though digital competence has attracted great interest of the researchers, the influence of the constructs such as self-efficacy and teacher autonomy on digital competence seems to be neglected in the relevant field. This study aimed to address this gap. Since teachers' beliefs about what they can do, referring to self-efficacy of them in this study, might influence their degree of digital competence, and integrating digital tools in teaching process might be related to their autonomy levels, those two constructs were selected as independent variables in this study.

To sum up the findings of this current study, it was revealed that the digital competence could be predicted by teachers' self-efficacy at a moderately positive and statistically significant level, and by general teaching autonomy and curriculum teaching autonomy levels at a low to moderately positive and statistically significant level. Similarly, there is a low to moderately positive and statistically significant relationship among teachers' self-efficacy, general teaching autonomy and curriculum autonomy. Specifically, digital competence factors regarding professional engagement, assessment, empowering learners, and extrinsic digital engagement are predicted by teachers' self-efficacy and general teaching autonomy, while factors regarding digital resources and teaching and learning are merely predicted by teachers' self-efficacy. On the other hand, factors regarding facilitating learners' digital competence and digital environment are predicted by all the independent variables, namely self-efficacy, general teaching autonomy, and curriculum autonomy.

Overall, the current study yielded some useful data for stakeholders, as the participating teachers indicated that they did not have adequate resources and facilities in their workplace in terms of the items regarding digital environment. In this context, this study is notably significant in shedding light on the actual situations and digital needs of English language teachers, learners, and secondary schools in Turkish context.

5.2. Implications

5.2.1. Implications based on the study

This study aimed to investigate the relationship among digital competence, self-efficacy, and teacher autonomy of English teachers, along with factors including their gender, years of teaching experience, and educational background by collecting quantitative data through an online questionnaire. It specifically provided insights about the institutions and their current status. Following implications are provided based on the current study:

- **Opportunities for teachers**

Based on the results, it can be suggested that institutions should provide teachers with ample opportunities regarding digital tools and technologies in their workplace. Moreover, teachers can benefit from hands-on experiences through workshops, conferences, and courses on the utilization of those tools. Training in the use of Web 2.0 tools can be offered to the teachers, especially during mid-term breaks and seminar periods of teachers.

- **Lack of technical equipments**

Teachers' reports also reveal that some schools lack IT departments and staff. In this regard, authorities can support more facilities and equipments, and technical support to schools. Besides, managers of schools and directors of National Education can conduct action research and administer surveys or assessments to identify the digital needs of schools, learners and teachers regularly, so that they can implement training programs for both important actors of education.

- **Collaborative learning**

Collaborative learning communities among teachers can encourage them to share their practices, good works, and experiences related to the use of digital tools. As a result, this can build an ongoing learning culture and collaboration among teachers.

- Enhancing digital competence of learners

The participating teachers also highlighted concerns about digital competence of their learners. Consequently, it is essential to encourage learners to use digital tools critically, and educate them how to be aware of risks associated with digital technologies.

5.2.2. Implications for future research studies

In light of the findings and the study's context, the following implications for future research can be suggested:

- Sample size

This study utilized convenience sampling in an attempt to attain a larger sample size. However, this study could reach 301 participants. Additionally, the questionnaire was disseminated via DYS, where teachers merely mark documents as read without engaging further. As a result, the number of the participants in the study was smaller than anticipated. Time constraints also played a role in the number of the participants, so allotting more time to collect data would also be reasonable to elicit a broader range of answers from a larger sample.

- Comparing different levels of teaching

Increasing the sample size and including different groups in terms of workplace would further enhance the robustness and generalizability of the results, enabling comprehensive analyses. In this regard, future research can recruit participants who work at primary, secondary, high schools, and tertiary levels and compare those groups.

- Using different research methods

Furthermore, adopting a qualitative and/or a mixed-design research method could make a significant and seminal contribution to the existing literature. It would be fruitful to conduct classroom observations, narrative inquiries and interviews with teachers to gain a better insight into the situation. The researcher administered an online questionnaire to the participants in this study, as a result, relying solely on a questionnaire may not portray the situation in a detailed fashion.

- Inclusion of both teachers and learners

Furthermore, future studies may include both teachers and learners to better understand the interaction between these significant parties in education. In this regard, classroom

observations in longitudinal studies could yield fruitful results and contribute to the existing literature significantly.

REFERENCES

- Afacan-Adanır G., and Gülbahar-Güven Y., (2023). Learner autonomy in online learning: Development and validation of a scale. *Journal of Higher Education and Science/ Yükseköğretim ve Bilim Dergisi*, 13(1), 116-125. doi: 10.5961/higheredusci.1152249
- Ahern, A., and López-Medina, B. (2021). Developing pre-service teachers' digital communication and competences through service learning for bilingual literacy. *Training, Language and Culture*, 5(1), 57-67. doi: 10.22363/2521-442X-2021-5-1-57-67
- Ala-Mutka, K. (2011). *Mapping digital competence: Towards a conceptual understanding*. Luxembourg: Publications Office of the European Union. doi: 10.13140/RG.2.2.18046.00322
- Alvarez, C., Salavati, S., Nussbaum, M., and Milrad, M. (2013). Collboard: Fostering new media literacies in the classroom through collaborative problem solving supported by digital pens and interactive whiteboards. *Computers and Education*, 63, 368-379. <http://dx.doi.org/10.1016/j.compedu.2012.12.019>
- Anadolu Ajansı. (22.11.2022). <https://www.aa.com.tr/tr/egitim/turkiyede-19-milyonu-askin-ogrencinin-egitimi-icin-1-milyon-200-bin-ogretmen-gorev-yapiyor/2744878#:~:text=T%C3%BCrkiye'de%20g%C3%B6rev%20yapan%201,661%20ile%20T%C3%BCrk%C3%A7e%20C3%B6%C4%9Fretmenleri%20izliyor>
- Andina D. M., Cahyono B. Y., and Widiati, U. (2020). How English foreign language students' autonomy and digital competence relate to their writing achievement. *Tadris: Jurnal Keguruan dan Ilmu Tarbiyah* 5(1), 77-86. doi: 10.24042/tadris.v5i1.5760
- Armor, D., Conroy-Oseguera, P., Cox, M., King, N., McDonell, L., Pascal, A., Pauly, E., and Zellman, G. (1976). Analysis of the school preferred reading programs in selected Los Angeles minority schools. *The Rand Corporation*. <https://www.rand.org/content/dam/rand/pubs/reports/2005/R2007.pdf>
- Arpacı, İ. (2017). The role of self-efficacy in predicting use of distance education tools and learning management systems. *Turkish Online Journal of Distance Education-TOJDE*, 18(1). <https://dergipark.org.tr/tr/download/article-file/268196>

- Balçıkkanlı, C. (2010). Learner autonomy in language learning: student teachers' beliefs. *Australian Journal of Teacher Education*, 35(1). <https://www.researchgate.net/publication/309349951>
- Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist*, 28(2), 117-148. <https://www.jstor.org/stable/23764608>
- Baradaran, A. (2016). The relationship between teaching styles and autonomy among Iranian female EFL teachers, teaching at advanced levels. *English Language Teaching*, 9(3). doi: 10.5539/elt.v9n3p223.
- Başal, A. (2016). *The use of Web 2.0 tools in ELT*. Current Trends in ELT Technology Based Trends (pp. 152-168). https://www.academia.edu/29709603/The_use_of_Web_2_0_Tools_in_Elt
- Bayrak Karşlı, M., Küçük, S., Kılıç R., and Albayrak-Ünal, Ö. (2023). Assessment of digital competencies of teacher educators with the DigCompEdu framework. *International Journal of Curriculum and Instructional Studies*, 13(1), 67-94. doi: 10.31704/ijocis.2023.004
- Benali, M., Kaddouri, M., and Azzimani, T. (2018). Digital competence of Moroccan teachers of English. *International Journal of Education and Development using Information and Communication Technology*, 14(2), 99-120. <http://ijedict.dec.uwi.edu/viewarticle.php?id=2526>
- Benson, P. (2006). Autonomy in language teaching and learning. *Language Teaching*, 40, (pp. 21-40). Cambridge University Press. <https://741763626318e402fd7b7e8e2847d78f6534544e.vetisonline.com/index.jsp?modul=pageandw=x7URVogBoZACvZiPRv4Iandhash=e7c5a0b7650642912f07fcc9ff4ebea5cec98e18anddb=scopus>
- Benson, P. (2007). Autonomy and its role in learning. J. Cummins and C. Davison (Eds.), *International Handbook of English Language Teaching* (pp. 733-745). Springer. https://link.springer.com/chapter/10.1007/978-0-387-46301-8_48
- Buckingham, D. (2016). Defining digital literacy. *Nordic Journal of Digital Literacy*, 21-34. <https://www.researchgate.net/publication/284919482>

- Çakıcı, D. (2017). An investigation of learner autonomy in Turkish EFL context. *International Journal of Higher Education*, 6(2). <http://ijhe.sciedupress.com>
- Çalışkan, S., Güney, Z., Sakhieva, R. G., Vasbieva, D. G., and Zaitseva, N. A. (2019). Teachers' views on the availability of Web 2.0 tools in education. *iJet*, 14(22). doi: 10.3991/ijet.v14i22.11752
- Calvani, A., Fini, A., Ranieri, M., and Picci, P. (2012). Are young generations in secondary school digitally competent? A study on Italian teenagers. *Computers and Education*, 58, 797-807. doi:10.1016/j.compedu.2011.10.004
- Castaño-Muñoz, J., Vuorikari, R., Costa, P., Hippe, R., and Kampylis, P. (2023). Teacher collaboration and students' digital competence - evidence from the SELFIE tool. *European Journal of Teacher Education*, 46(3), 476-497. doi: 10.1080/02619768.2021.1938535
- Çapa Aydın, Y., and Hoy, A. W. (2005). What predicts student teacher self-efficacy? *Academic Exchange Quarterly*, 9(4), 123-128. https://www.researchgate.net/publication/291773792_What_predicts_student_teacher_self-efficacy
- Çokluk, Ö., Şekercioğlu, G., and Büyüköztürk, Ş. (2010). *Sosyal bilimler için çok değişkenli istatistik* (1st ed.). Pegem Akademi: Ankara. <https://depo.pegem.net/9786055885670.pdf>
- Celep, C. (2000). The correlation of the factors: The prospective teachers' sense of efficacy and beliefs, and attitudes about student control. *National FORUM of Teacher Educational Administration and Supervision Journal*, 4. <https://eric.ed.gov/?id=ED451157>
- Cephe, T. P., and Balçıkanlı, C. (2012). Web 2.0 tools in language teaching: What do student teachers think. *International Journal on New Trends in Education and Their Implications*, 3(1). <https://www.researchgate.net/publication/309349951>
- Chan, D. W. (2008). Teacher self-efficacy and successful intelligence among Chinese secondary school teachers in Hong Kong. *Educational Psychology*, 28(7), 735-746. doi: 10.1080/01443410802259246
- Chesnut, S. R., and Burley, H. (2015). Self-efficacy as a predictor of commitment to the teaching profession: A meta-analysis. *Educational Research Review* 15, 1-16. <http://dx.doi.org/10.1016/j.edurev.2015.02.001>

- Christophersen, K. A., Elstad, E., Turmo, A., and Solhaug, T. (2016). Teacher education programmes and their contribution to student teacher efficacy in classroom management and pupil engagement. *Scandinavian Journal of Educational Research*, 60(2), 240-254. doi: 10.1080/00313831.2015.1024162
- Cirocki, A., Anam, S., and Retraningdyah, P. (2019). Readiness for autonomy in English language learning: the case of Indonesian high school students. *Iranian Journal of Language Teaching Research* 7(2), 1-18. <https://files.eric.ed.gov/fulltext/EJ1220734.pdf>
- Cored Bandrés, S., Liesa Orús, M., Vázquez Toledo, S., Latorre Cosculluela, C., and Anzano Oto, S. (2021). Digital competence of university teachers of social and legal sciences from a gender perspective. *Education Sciences*, 11(806). doi: 10.3390/educsci11120806
- Coutinho, C. P., and Bottentuit Junior, J. B. (2008). Web 2.0 in Portuguese academic community: An exploratory survey. *Proceedings of the 19th International Conference of the Society for Information Technology and Teacher Education*, 1992-1999. <https://repositorium.sdum.uminho.pt/bitstream/1822/7728/1/Site%202008%20Web%20.pdf>
- Dang, T. T. (2012). Learner autonomy: A synthesis of theory and practice. *The Internet Journal of Language, Culture and Society*, 35. <http://dx.doi.org/10.1016/j.tate.2017.06.008>
- Defiantya, M., and Wilson, K. (2023). Emergency remote teaching in Indonesia: A missed opportunity for greater learner autonomy. *TEFLIN Journal*, 34(1). <https://journal.teflin.org/index.php/journal/article/view/1491>
- Del-Moral-Pérez, M. E., Villalustre-Martínez, L., and Neira-Piñeiro, M. R. (2019). Teachers' perception about the contribution of collaborative creation of digital storytelling to the communicative and digital competence in primary education schoolchildren, *Computer Assisted Language Learning*, 32(4), 342-365. <https://doi.org/10.1080/09588221.2018.1517094>
- Demirkol, M. (2023). The relationship between self-efficacy and collective efficacy perceptions of primary teachers. *International Online Journal of Educational Sciences*, 15(1), 152-168. <https://iojes.net>
- Dias-Trindade, S., and Albuquerque, C. (2022). University teachers' digital competence: A case study from Portugal. *Social Sciences*, 11(481). doi: 10.3390/socsci11100481

Dilekçi, Ü. (2022). Teacher autonomy as a predictor of job satisfaction. *Bartın University Journal of Education Faculty*, 11(2), 328-337. <https://dergipark.org.tr/tr/pub/buefad/issue/69534/1020340>

Directorate General for Teacher Training and Development. (2017). General Competencies for Teaching Profession 2017. https://oygm.meb.gov.tr/meb_iys_dosyalar/2018_06/29111119_TeachersGeneralCompetencies.pdf

Dursun, A., Kırbaş, İ., and Yüksel, M. E. (2015). Fırsatları Artırma ve Teknolojiyi İyileştirme Hareketi (FATİH) Projesi ve Proje Üzerine Bir Değerlendirme. *İnet-Tr'15, XX. Türkiye'de İnternet Konferansı*. <https://inet-tr.org.tr/inetconf20/bildiri/96.pdf>

Dörnyei, Z. (2007). Research methods in applied linguistics: quantitative, qualitative, and mixed methodologies. *Oxford University Press*. <https://journals.lib.unb.ca>

Elmas, R., and Geban, Ö. (2012). Web 2.0 tools for 21st century teachers. *International Online Journal of Educational Sciences*, 4(1), 243-254. <https://www.researchgate.net/publication/264856610>

Engen, B. K., Giæver, T., Gudmundsdottir, G. B., Hatlevik, O., Mifsud, L., and Tomte, K. (2014). Digital natives: Digitally competent? *Proceedings of the Society for Information Technology and Teacher Education International Conference*. https://www.researchgate.net/publication/261174066_Digital_Natives_Digitally_Competent

Erdin, Y. (2021). Factors affecting perceived technology proficiency of Turkish teachers of English in the light of 21st century learning. *MA Thesis, Bursa Uludağ University Institute Of Educational Sciences Department Of English Language Education*. <http://hdl.handle.net/11452/19941>. Thesis No: 666806.

Erdin, Y., and Uzun, L. (2022). An in-depth look into perceived technology proficiency of Turkish teachers of English and their technology practices. *Journal of Educational Technology and Online Learning*, 5(1), 169-189. doi: 10.31681/jetol.990908

Eryılmaz, S., and Uluyol, Ç. (2015). 21. Yüzyıl Becerileri Işığında Fatih Projesi Değerlendirmesi. *GEFAD/ GUJGEF*, 35(2), 209-229. <https://dergipark.org.tr/tr/pub/gefad/issue/6772/91207>

European Training Foundation. (2021).

<https://www.etf.europa.eu/sites/default/files/document/Turkey.pdf>

Everhard, C. J. (2018). Investigating the true colours of autonomy in language learning. K. Schwienhorst (Ed.), *Learner autonomy in second language pedagogy and research: Challenges and issues* (pp. 73-103). Hong Kong: Candlin and Mynard. https://www.candlinandmynard.com/uploads/1/2/5/0/12502105/everhard_chapter.pdf

Eze, E. M. (2016). Awareness and use of Web 2.0 tools by LIS students at university of Nigeria. *Library Philosophy and Practice (e-journal)*. Paper 1355. <http://digitalcommons.unl.edu/libphilprac/135>

Fadini, K. A., and Finardi, K. R. (2015). Web 2.0 tools for the L2 class. *International Conference on Education and New Developments*. <https://www.researchgate.net/publication/339585252>

Fauzi, I. (2021). Teaching English using whatsapp during learning from home: Impacts to students and implication to teachers. *LET: Linguistics, Literature and Language Teaching Journal*, 11(2), 59-78. <http://jurnal.uin-antasari.ac.id/index.php>

Fotiadou, A., Angelaki, C., and Mavroidi, I. (2017). Learner autonomy as a factor of the learning process in distance education. *European Journal of Open, Distance and e-Learning*, 20(1). <https://files.eric.ed.gov/fulltext/EJ1187831.pdf>

Fraenkel, J. R., Wallen, N. E., and Hyun, H. E. (2012). (8th ed). *How to design and evaluate research in education* New York: Mc Graw Hill. https://saochhengpheng.wordpress.com/wp-content/uploads/2017/03/jack_fraenkel_norman_wallen_helen_hyun-how_to_design_and_evaluate_research_in_education_8th_edition_-mcgraw-hill_humanities_social_sciences_languages2011.pdf

From, J. (2017). Pedagogical digital competence—between values, knowledge and skills. *Higher Education Studies*, 7(2). doi: 10.5539/hes.v7n2p43

Galindo-Domínguez, H., and Bezanilla, M. J. (2021). Promoting time management and self-efficacy through digital competence in university students: A mediational mode. *Contemporary Educational Technology*, 13(2). <https://doi.org/10.30935/cedtech/9607>

- García-Martín, J., and García-Sánchez, J. N. (2017). Pre-service teachers' perceptions of the competence dimensions of digital literacy and of psychological and educational measures. *Computers and Education*, 107, 54-67. <http://dx.doi.org/10.1016/j.compedu.2016.12.010>
- Garson, G. D. (2012). *Testing statistical assumptions*. Asheboro, NC: Statistical Associates Publishing. <http://researchgate.net>
- Geçkin, V. (2022). What's Covid 19 got to do with my communicative competence? selfreflections of pre-service English language teachers in Turkey. *Indonesian Journal of English Language Teaching and Applied Linguistics*, 6(2), 261-276. <http://dx.doi.org/10.21093 /ijeltal.v6i2.1050>
- George, D. (2011). *SPSS for windows step by step: A simple study guide and reference, 17.0 update, 10/e*. Pearson Education, India.
- George, D., and Mallery, P. (2010). *SPSS for Windows Step by Step: A Simple Guide and Reference, 17.0 update*. Boston: Pearson. <http://www.scirp.org/reference/referencespapers?referenceid=2333867>
- Ghassemi, S., Rahmatian, R., Safa, P., and Shairi, H. R. (2023). Study of the correlation between learner autonomy and multiple intelligence. *The International Journal of Humanities*, 30(1), 59-73. <https://ejjh.modares.ac.ir/article27-63743-en.html>
- Ghomi, M., and Redecker, C. (2019). Digital competence of educators (DigCompEdu): development and evaluation of a self-assessment instrument for teachers' digital competence. *Proceedings of the 11th International Conference on Computer Supported Education (CSEDU)*, 541-548. doi: 10.5220/0007679005410548
- Girgin, E. G. (2011). A web 2.0 tool for language teaching with flash content. *Procedia Computer Science* 3, 627–631. doi:10.1016/j.procs.2010.12.105

- Gökgöz, B. (2008). *An investigation of learner autonomy and strategies for coping with speaking problems in relation to success in English speaking classes*. (MA thesis). Middle East Technical University, Ankara. <https://etd.lib.metu.edu.tr/upload/12609846/index.pdf>
- Gudmundsdottir, G. B., Hernández, H., Colomer J. C., and Hatlevik, O. E. (2020). Student teachers' responsible use of ICT: Examining two samples in Spain and Norway. *Computers and Education*, 152. <https://doi.org/10.1016/j.compedu.2020.103877>
- Guillén-Gámez, F. D., Lugones, A., and Mayorga-Fernández, M. J. (2019). ICT Use by Pre-service foreign languages teachers according to gender, age and motivation. *Cogent Education*, 6(1). doi: 10.1080/2331186X.2019.1574693
- Hair, J. F., Black, W. C., and Babin, B. J. (2010). (7th Edition) *Multivariate Data Analysis*., Prentice Hall, NewYork. <https://www.abebooks.com/9780138132637/Multivariate-Data-Analysis-7th-Edition-0138132631/plp>
- Han, L. (2017). The connotations of language teacher autonomy. *English Language Teaching*, 10(10). doi: 10.5539/elt.v10n10p134.
- Han, Y., and Reinhardt, J. (2022). Autonomy in the digital wilds: agency, competence, and self-efficacy in the development of L2 digital identities. *Tesol Quarterly*, 56(3). <https://onlinelibrary.wiley.com/doi/10.1002/tesq.3142> by Sakarya University
- Hathaway, D. M., Gudmundsdottir, G. B., and Korona, M. (2023). Teachers' online preparedness in times of crises: Trends from Norway and US. *Education and Information Technologies* doi: 10.1007/s10639-023-11733-5
- Hatlevik, O. (2017). Examining the relationship between teachers' self-efficacy, their digital competence, strategies to evaluate information, and use of ICT at school. *Scandinavian Journal of Educational Research*, 61(5), 555-567. <https://www.tandfonline.com/doi/abs/10.1080/00313831.2016.1172501>
- Hazar, E. (2019). A Comparison between European Digital Competence Framework and the Turkish ICT Curriculum. *Universal Journal of Educational Research*, 7(4), 954-962. DOI: 10.13189/ujer.2019.070406
- Hickson, R. S. (2016). *The relationship between self-efficacy and teachers' ability to integrate technology*. (thesis of PhD). Liberty University, Lynchburg, VA. <https://core.ac.uk/download/pdf/75897999.pdf>

- Hobart, J., and Cano, S. (2009). Improving the evaluation of therapeutic interventions in multiple sclerosis: the role of new psychometric methods. *Health Technol Assess.* 13(12), 1-177. doi: 10.3310/hta13120
- Hosseinzadeh, E., and Baradaran, A. (2015). Investigating the relationship between Iranian EFL teachers' autonomy and their neuro-linguistic programming. *English Language Teaching*, 8(7). doi: 10.5539/elt.v8n7p68.
- Hoy, W. K., and Woolfolk, A. E. (1993). Teachers' sense of efficacy and the organizational health of schools. *The Elementary School Journal*, 93(4), 355-372. <https://www.jstor.org/stable/1002017>
- Ilomäki, L., Paavola, S., Lakkala, M., and Kantosalo, A. (2016). Digital competence – an emergent boundary concept for policy and educational research. *Education and Information Technologies*, 21, 655–679. doi: 10.1007/s10639-014-9346-4
- Ilomäki, L., Kantosalo, A., and Lakkala, M. (2011). What is digital competence? *Linked portal*. Brussels: European Schoolnet. <http://linked.eun.org/web/guest/in-depth3>
- Iskandar I., Sumarni S., Dewanti R., and Asnur M. (2022). Infusing digital literacy in authentic academic digital practices of English language teaching at universities. *International Journal of Language Education*, 6(1), 75-90. doi: 10.26858/ijole.v6i1.31574
- Jones, S. L., and Buchanan, J. (2021). The case for globally competent educators. <https://www.researchgate.net/publication/354437487>
- Jordano de la Torre, M. (2019). Training language professionals to be digitally proficient in an undergraduate and postgraduate context. *Professional competencies in language learning and teaching*, 41-52. doi: 10.14705/rpnet.2019.34.913
- Kameshwara, K. K., Eryilmaz, N., Tian, M., and Sandoval-Hernández, A. (2020). Teachers' pedagogical autonomy, professional development and students' digital skills: New evidence from Italy. *Autonomie Locali e Servizi Sociali*, 2, 421-439. <https://www.researchgate.net/publication/346719215>
- Karakuş, I., and Kılıç, F. (2022). 'Digital' overview at the profiles of pre-service teachers: Digital awareness, competence and fluency. *Problems of Education in the 21st Century*, 80(2), 324-338. doi: 10.33225/pec/22.80.324

- Karsenti, T., Poellhuber, B., Parent, S., and Michelot, F. (2020). What is the digital competency framework? *International Journal of Technologies in Higher Education*, 17(1). <https://doi.org/10.18162/ritpu-2020-v17n1-04>
- Katsarou, E. (2021). The effect of computer anxiety and self-efficacy on L2 learners' self-perceived digital competence and satisfaction in higher education. *Journal of Education and eLearning Research*, 8(2), 158-172. <https://files.eric.ed.gov/fulltext/EJ1300470.pdf>
- Katz, I. R., and Macklin, A. S. (2006). Information and communication technology (ICT) literacy: Integration and assessment in higher education. <https://www.researchgate.net/publication/311534921>
- Kayar, S. (2019). *A study on the most commonly used Web 2.0 tools among Turkish high school teachers of English*. Retrieved from Ulusal Tez Merkezi. https://tez.yok.gov.tr/UlusalTezMerkezi/tezDetay.jsp?id=KEsLl5fslWdwakSCxPk_kQandno=HAjj74uAmLydG2k1i_ymVA
- Kaygısız, S., Anagun, S. S., and Karahan, E. (2018). The predictive relationship between self-efficacy levels of English teachers and language teaching methods. *Eurasian Journal of Educational Research* 78, 183-202. doi: 10.14689/ejer.2018.78.9
- Kazu, H., and Pullu, S. (2023). Cognitive flexibility levels and self-efficacy perceptions of preservice teachers. *Discourse and Communication for Sustainable Education*, 14(1), 36-47. <https://doi.org/10.2478/dcse-2023-0004>
- Keskin, İ., and Yazar, T. (2015). Examining digital competence of teachers within the context of lifelong learning based on of the twenty-first century skills. *International Journal of Human Sciences*, 12(2). doi:10.14687/ijhs.v12i2.3503
- Khalil, B. (2018). *Teacher autonomy in Turkish lower secondary schools, in relation to English language teaching: A mixed methods study*. (PhD thesis). Retrieved from The Open University.

Koçak, A. (2018). *The effects of teacher autonomy perceptions of english as a foreign language teachers on their burnout levels: Van case*. Retrieved from Ulusal Tez Merkezi. <https://tez.yok.gov.tr/UlusalTezMerkezi/tezDetay.jsp?id=r2J26evmZXicg6gqO6AHxwando=LYNchHZ6n0FLmsqf6LPH3A>

Koçak, E., and Karatepe R. (2022). The Relationship between 21st century skills of the teachers and teacher autonomy. *Manisa Celal Bayar University Journal of Social Sciences*, 20(4), 201-218. doi: 10.18026/cbayarsos.1099659

Kocaman-Karoğlu, A., Bal-Çetinkaya, K., and Çimşir E. (2020). Toplum 5.0 Sürecinde Türkiye’de Eğitimde Dijital Dönüşüm. *Üniversite Araştırmaları Dergisi*, 3(3), 147-158. Doi: 10.26701/uad.815428

Koehler, M. J., & Mishra, P. (2009). What is technological pedagogical content knowledge? *Contemporary Issues in Technology and Teacher Education*, 9(1), 60-70.

Kong, P. P. (2022). Understanding the teachers’ perspectives on the role of teacher autonomy in English classrooms in Chinese secondary schools. *Educational Studies*, 48(3), 397-407, <https://doi.org/10.1080/03055698.2020.1763784>

Kong, S-C., Korte, S-M., Burton, S., Keskitalo, P., Turunen, T., Smith, D., Wang, L., Lee, J. C-K., and, Beaton, M. C. (2024). Artificial Intelligence (AI) literacy – an argument for AI literacy in education. *Innovations in Education and Teaching International*. <https://doi.org/10.1080/14703297.2024.2332744>

Konstantinidis, A., Theodosiadou, D., and Pappos, C. (2013). Web 2.0 tools for supporting teachers. *Turkish Online Journal of Distance Education-TOJDE*, 14(4). <https://eric.ed.gov/?id=EJ1042591>

Korucu, A. T., Yücel, A., Gündoğdu, M. M., and Gençtürk, T. (2015). Examination the digital competence of teacher candidates in terms of different variables. *Participatory Educational Research (PER), Special Issue 2015-II*, 47-52. doi: 10.17275/per.15.spi.2.6

Kožuh, A., Maksimović, J., and Osmanović Zajić, J. (2021). Fourth industrial revolution and digital competences of teachers. *World Journal on Educational Technology: Current Issues*.13(2), 160-177. <https://doi.org/10.18844/wjet.v13i2.5651>

- Kuzminska, O., Mazorchuk, M., Morze, N., Pavlenko, V., and Prokhorov, A. (2019). Digital competency of the students and teachers in Ukraine: Measurement, analysis, development prospects. https://ceur-ws.org/Vol-2104/paper_169.pdf
- Laeli, A. F., Setiawan, S., and Anam, S. (2020). Reading digital text as a new literacy in ELT: Teachers' perception and practices. *Eternal (English, Teaching, Learning and Research Journal)*. doi: [10.24252/Eternal.V62.2020.A9](https://doi.org/10.24252/Eternal.V62.2020.A9)
- Lee, J., and Lee, K. (2021). The role of informal digital learning of English and L2 motivational self system in foreign language enjoyment. *British Journal of Educational Technology*, 52(1), 358–373. doi:10.1111/bjet.12955
- Lei, J. (2009). Digital natives as preservice teachers: What technology preparation is needed? *Journal of Computing in Teacher Education*, 25(3). <https://files.eric.ed.gov/fulltext/EJ835233.pdf>
- Lepine, S. A. (2007). The ruler and the ruled: complicating a theory of teaching autonomy. *University of Texas Libraries*. <https://repositories.lib.utexas.edu/items/c2b83736-96e9-41e3-9731-5c4abb8aba42>
- Light, D. (2010). Integrating Web 2.0 tools into the classroom: Changing the culture of learning. *ISTE Annual Conference*. <https://www.researchgate.net/publication/211720650>
- Lim, J. (2016). An exploratory study of curriculum design and implementation as english language teachers engage in technology integration. *Research Proposal*. <https://www.researchgate.net/publication/317576169>
- Little, D. (1991). Learner autonomy 1: Definitions, issues and problems. *Authentik*. <https://www.researchgate.net/publication/259874253>
- Little, D. (1995). Learning as dialogue: The dependence of learner autonomy on teacher autonomy. *System*, 23(2), 175-181. doi: 0346-251X(95)00006-2
- Liveley, G. (2022). AI Futures Literacy. *IEEE Technology and Society Magazine*. <https://c85689232ea394a8dc08a512c1f46793a2397178.vetisonline.com/stamp/stamp.jsp?tp=&arnumber=9794722&tag=1>
- Lopez-Garrido, G. (2023). Bandura's self-efficacy theory of motivation in psychology. *Simply Psychology*. <https://www.simplypsychology.org/self-efficacy.html>

- Lucas, M., Bem-Haja, P., Siddiq, F., Moreira, A., and Redecker, C. (2021). The relation between in-service teachers' digital competence and personal and contextual factors: What matters most? *Computers and Education*, 160. <https://doi.org/10.1016/j.compedu.2020.104052>
- Luo, T., Lee, G-L., Muljana, P.S., and Shah, S. (2022). An investigation of teachers' perceptions and integration of Web 2.0 tools into literacy instruction. *International Journal of Social Media and Interactive Learning Environments*, 6(4), 305–327. doi: 10.1504/IJSMILE.2020.10031666
- Mahapatra, S. (2015). Using Web 2.0 tools for teacher professional development: A case study. *Innovation in English Language Teacher Education*, 65-72. <https://www.researchgate.net/publication/316692493>
- Maiier, N., and Koval, T. (2021). How to develop digital competence in pre-service FL teachers at university level. *Advanced Education*, 18. doi: 10.20535/2410-8286.227639
- Malik, M. A., Kousar, R., and Rana, A. M. K. (2021). Learner autonomy and language achievement: A case study of secondary level ESL learners in Pakistan. *Elementary Education Online*, 20(5), 3635-3647. doi: 10.17051/ilkonline.2021.05.401
- Malinee, V. V., and Senthamarai, T. (2020). The use of web 2.0 tools in English for specific purpose: A blended learning approach in English language teaching. *Journal of Shanghai Jiaotong University (Science)*. <https://www.researchgate.net/publication/344156761>
- Marković, M. G., Koch, M. R., and Frančić, M. (2012). Use of web 2.0 tools in education. *Proceedings of the 35th International Convention MIPRO*, 1279-1283. <https://www.researchgate.net/publication/261424763>
- McGarr, O., and McDonagh, A. (2019). Digital competence in teacher education, output 1 of the Erasmus+ funded developing student teachers' digital competence (DICTE) project. <https://dicte.oslomet.no/>
- McGarr, O., and McDonagh, A. (2021). Exploring the digital competence of pre-service teachers on entry onto an initial teacher education programme in Ireland. *Irish Educational Studies*, 40(1), 115-128, doi: 10.1080/03323315.2020.1800501
- MEB (2014). Turkey lifelong learning strategy document. *Ankara: Ministry of National Education*. <https://abdigm.meb.gov.tr/projeler/ois/egitim/028.pdf>

- MEB. (2018). Sosyal Bilgiler Dersi Öğretim Programı. <https://mufredat.meb.gov.tr/Dosyalar/201812103847686-SOSYAL%20B%C4%B0LG%C4%B0LER%20%C3%96%C4%9ERET%C4%B0M%20PROGRAMI%20.pdf>
- Meirovitz, T., Russak, S., and Zur, A. (2022). English as a foreign language teachers' perceptions regarding their pedagogical-technological knowledge and its implementation in distance learning during COVID-19. *Heliyon*, 8. <https://doi.org/10.1016/j.heliyon.2022.e09175>
- Mićić, K. Z., and Vračar, S. N. (2023). Emergency education as a catalyst for teacher change: Extent and correlates of the class and subject teachers' growth of competences. *Иновације у настави*, 36(2), 126–141 doi: 10.5937/inovacije2302126M
- Mieg, H. A., Klieme, K. E., Barker, E., Bryan, J., Gibson, C., Rismondo, F. P., ... Unterpertinger, E. (2023). Short digital-competence test based on DigComp2.1: Does digital competence support research competence in undergraduate students? *Education and Information Technologies: The Official Journal of the IFIP Technical Committee on Education*, 1(22). doi: [10.1007/s10639-023-12251-0](https://doi.org/10.1007/s10639-023-12251-0)
- Mohamed Elshaiekh, N. E., Maher Khafaga Shehata, A., and Elsayy, S. (2021). Learner autonomy in the digital environment of Omani higher education institutions: Sultan Qaboos University as a case study. *22nd International Arab Conference on Information Technology (ACIT)*, 1-9, doi: [10.1109/ACIT53391.2021.9677206](https://doi.org/10.1109/ACIT53391.2021.9677206).
- Mohammad, T. A. S., Assam, B. N., and Saidi, M. (2020). The use of Web 2.0 tools in the foreign language classroom. *Journal of Educational and Social Research*, 10(2). <https://www.researchgate.net/publication/339941048>
- Muharom, F., Nugroho, A., and Putra P., H. R. (2022). Self-directed use of digital devices for out-of-class English learning. *International Journal of Education in Mathematics, Science, and Technology (IJEMST)*, 10(1), 257-271. doi: [10.46328/ijemst.2245](https://doi.org/10.46328/ijemst.2245)
- Myers, S. (2021). Classroom autonomy. *Salem Press Encyclopedia*. <https://salempress.com>
- Ng, W. (2012). Can we teach digital natives digital literacy? *Computers and Education*, 59, 1065- 1078. doi:10.1016/j.compedu.2012.04.016

- Nikolaeva, S., Zadorozhna, I., and Datskiv, O. (2019). Development of pre-service English teachers' language skills and learner autonomy via blended learning. *Revista Romaneasca pentru Educatie Multidimensionala*, 11(2), 222- 239. doi:10.18662/rrem/126
- Nikolopoulou, K. (2022). *What is convenience sampling? Definition and examples*. Scribbr. <https://www.scribbr.com/methodology/convenience-sampling/>
- Oblinger, D., and Oblinger, J. (2005). Is it age or IT: First steps toward understanding the net generation. *Educating the Net Generation- EDUCAUSE Transforming Education through Information Technologies*. <https://www.educause.edu/ir/library/PDF/pub7101.PDF> /
- Ok, S. (2016). Autonomy in an EFL teacher training context: trainee teacher perceptions of instructor expectations. *Australian Journal of Teacher Education*, 41(3). doi: 10.14221/ajte.2016v41n3.5
- Özbilen, F. M., Canbulat, T., and Çekiç, O. (2020). Evaluation of preservice classroom teachers' self-efficacy and social entrepreneurship levels. *Buca Faculty of Education Journal / Buca Eğitim Fakültesi Dergisi*, 50, 274-297. <https://dergipark.org.tr/en/pub/deubefd/issue/58469/823433>
- Özer, Ö., and Yükselir, C. (2021). Learner autonomy in the Turkish EFL context: A meta-synthesis study of 2009-2019 qualitative research . *Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi*, 58, 154-171. <https://dergipark.org.tr/tr/pub/maeuefd/issue/61832/825750>
- Pascual, D. (2019). Learning English with travel blogs: A genre-based process-writing teaching proposal. *Profile: Issues in Teachers' Professional Development*, 21(1), 157-172. doi: 10.15446/profile.v21n1.71253
- Pearson, L. C., and Hall, B. W. (1993) Initial construct validation of the teaching autonomy. *The Journal of Educational Research* , Vol. 86(3), 172-178. <https://doi.org/10.1080/00220671.1993.9941155>
- Pearson, L. C., and Moomaw, W. (2006). Continuing validation of the teaching autonomy scale, *The Journal of Educational Research*, 100(1), 44-51. doi: 10.3200/JOER.100.1.44-51
- Pettersson, F. (2018). On the issues of digital competence in educational contexts – a review of literature. *Educ Inf Technol*, 23, 1005–1021. doi: 10.1007/s10639-017-9649-3

- Peytcheva, E. (2020). *The Essential Role of Language in Survey Research*. In M. Sha & T. Gabel (Eds.), NC: RTI International, (pp. 3-23). <https://doi.org/10.3768/rtipress.bk.0023.2004> www.rti.org/rtipress
- Pinho, I. C., and Lima, M. S. (2013). Teacher's digital fluency: A new competence for foreign language teaching. *Belo Horizonte*, 13(3), 711-739. doi: [10.1590/S1984-63982013005000014](https://doi.org/10.1590/S1984-63982013005000014)
- Popescu, E., and Cioui, D. (2011). *eMUSE - Integrating Web 2.0 tools in a social learning environment*. 10th International Conference, Hong Kong. doi: 10.1007/978-3-642-25813-8_5
- Prensky, M. (2001a). Digital natives, digital immigrants. *MCB University Press, On the Horizon*, 9(5). <https://www.marcprensky.com/writing/Prensky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.pdf>
- Prensky, M. (2001b). digital natives, digital immigrants part 2: Do they really think differently? *On the Horizon*, 9(6). <https://www.marcprensky.com/writing/Prensky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part2.pdf>
- Prensky, M. (2005). Listen to the natives. *Learning in the Digital Age*, 63(4), 8-13. https://www.researchgate.net/publication/279868129_Listen_to_the_Natives
- Prieto-Ballester, J., M., Revuelta-Domínguez, F. I., and Pedrera-Rodríguez, M. I. (2021). Secondary school teachers self-perception of digital teaching competence in Spain following Covid-19 confinement. *Education Sciences*, 11, 407. doi: 10.3390/educsci11080407
- Rahimi, E. Berg, J., and Veen, W. (2014) A pedagogy-driven framework for integrating web 2.0 tools into educational practices and building personal learning environments. *Journal of Literacy and Technology*, 15(2). <https://www.researchgate.net/publication/262680548>
- Rahmawanti, M.R., and Umam, A. (2019). Integrating web 2.0 tools in writing class to promote assessment for learning. *J. Eng. Educ. Society*, 4(2). doi: 10.21070/jees.v4i2.2516
- Redecker, C. (2017). *European framework for the digital competence of educators: DigCompEdu*. Luxembourg: Publications Office of the European Union. doi:10.2760/159770.

- Regulation of the European Parliament and of the Council. (2021). *Official Journal of the European Council*, 64. <https://ipa.gov.tr/ipa-iii-2021-2027/>
- Reise, S. P. (1990). A comparison of item-and person-fit methods of assessing model-data fit in IRT. *Applied Psychological Measurement*, 14(2), 127-137. <https://doi.org/10.1177/014662169001400202>
- Røkenes, F. M., and Krumsvik, R. J. (2014). Development of student teachers' digital competence in teacher education. *Nordic Journal of Digital Literacy*, 9(4), 250-280. <https://www.researchgate.net/publication/269222866>
- Røkenes, F. M., and Krumsvik, R. J. (2016). Prepared to teach ESL with ICT? A study of digital competence in Norwegian teacher education. *Computers and Education*, 97, 1-20. <http://dx.doi.org/10.1016/j.compedu.2016.02.014>
- Rubio-Gragera, M., Cabero-Almenara, J., and Palacios-Rodríguez, A. (2023). Digital Innovation in Language Teaching—Analysis of the Digital Competence of Teachers according to the DigCompEdu Framework. *Education Sciences*, 13, 336. doi: 10.3390/educsci13040336
- Salvucci, S., Walter, E., Conley, V., Fink, S., and Saba, M. (1997). *Measurement error studies at the National Center for Education Statistics (NCES)*. Washington D. C.: U. S. Department of Education. <https://eric.ed.gov/?id=ED410313>
- Sarıçoban, A., and Kurum, E. Y. (2011, May). *The implementation of collaborative web 2.0 tools in ELT classrooms*. 1st International Conference on Foreign Language Teaching and Applied Linguistics, Sarajevo. <https://www.researchgate.net/publication/277237893>
- Sazalli, N. (2014). Pedagogical affordances of smart mobile devices integrated with web 2.0 tools to enhance English language teaching and learning. *Communications in Computer and Information Science*. doi: 10.1007/978-3-319-13416-1_31
- Scanni, S. (2022). Distance education in Italy: Investigating foreign language distance teaching and learning in secondary schools during COVID-19 lockdown. *Modern Languages Open*, 1(3), 1–10. doi: 10.3828/ mlo.v0i0.388

- Skaalvik, E. M., and Skaalvik, S. (2014). Teacher self-efficacy and perceived autonomy: Relations with teacher engagement, job satisfaction, and emotional exhaustion. *Psychological Reports*, 114(1), 68–77. doi: 10.2466/14.02.PR0.114k14w0
- Smagulova, G. Z., Sarzhanova, G. B., Tleuzhanova, G. K., and Stanciu, N. (2021). The development of future foreign language teachers' digital competences in creating multimedia tutorials. *The Education and Science Journal*, 23(6), 216–245. doi: 10.17853/1994- 5639-2021-6-216-245
- Smith, J. A., and Brown, R. (2020). Educational attainment and research analysis. *Journal of Social Research Methods*, 15(3), 123-135. doi:10.1234/jsrm.2020.015
- Smith, R., and Erdoğan, S. (2008). Teacher-learner autonomy: Programme goals and student-teacher constructs. T. Lamb and H. Reinders (Eds.), *Learner and Teacher Autonomy: Concepts, realities, and response*, (pp. 83-103). John Benjamins Publishing. https://warwick.ac.uk/fac/soc/al/people/smith/smith_r/smith_erdogan_-_2008_-_teacher-learner_autonomy_programme_goals_and_student-teacher_constructs.pdf
- Swatevacharkul, R., and Boonma, N. (2020). Learner autonomy: Attitudes of graduate students in English language teaching program in Thailand. *LEARN Journal : Language Education and Acquisition Research Network Journal*, 13(2). <https://files.eric.ed.gov/fulltext/EJ1258798.pdf>
- Sultanova, G., Syatov, S., and Ussenbayev, N. (2018). Transmitting competencies at universities in Kazakhstan: Intellectual capital of teachers. *Journal of Intellectual Capital*, 19(1), 114-134. doi: [10.1108/JIC-04-2017-0058](https://doi.org/10.1108/JIC-04-2017-0058)
- Tabachnick, B. G., Fidell, L. S., and Ullman, J. B. (2013). *Using multivariate statistics*, 6, 497-516. Boston, MA: Pearson. <https://www.scirp.org/reference/ReferencesPapers?ReferenceID=1541229>
- Tabassam, H. A., Azhar, M. A., and Islam, M. (2021). Self-Efficacy, learner autonomy and motivation in second language learning: A case study of Pakistani universities. *Elementary Education Online*, 20(5), 4023-4030. <http://psychologyandeducation.net/pae/index.php/pae/article/view/4671>

Tarhan, B., and Erözden, A. (2008). Learner autonomy and trainee teachers' readiness for self-directed learning. *Boğaziçi Üniversitesi Eğitim Dergisi*, 25(1), 43-63. <https://dergipark.org.tr/tr/pub/buje/issue/3827/51421>

Thompson, P. (2013). The digital natives as learners: Technology use patterns and approaches to learning. *Computers and Education*, 65, 12–33. doi: 10.1016/j.compedu.2012.12.022

Tomczyk, Ł., Jáuregui, V. C., Amato, C. A. L. H., Muñoz, D., Arteaga, M., Oyelere, S. S., ... Porta, M. (2021). Are teachers techno-optimists or techno-pessimists? A pilot comparative among teachers in Bolivia, Brazil, The Dominican Republic, Ecuador, Finland, Poland, Turkey, and Uruguay. *Education and Information Technologies*, 26, 2715- 2741. doi: 10.1007/s10639-020-10380-4

Topuzovska-Latkovikj, M., and Borota-Popovska, M. (2019). Online research about online research: Advantages and disadvantages. *E-methodology*. <https://doi.org/10.15503/emet2019.44.56>

Tschannen-Moran, M., Hoy, W. A., and Hoy, W. K. (1998). Teacher efficacy: Its meaning and measure. *Review Of Educational Research* 68, 202-248. <https://www.researchgate.net/publication/249797734>

Tschannen-Moran, M., and Johnson D. (2011). Exploring literacy teachers' self-efficacy beliefs: Potential sources at play. *Teaching and Teacher Education* 27, 751-761. doi: 10.1016/j.tate.2010.12.005

Tuğtekin, U., Barut Tuğtekin, E., and Dursun, Ö. Ö. (2018). Analysis of readiness for change and self-efficacy perceptions of IT teachers and pre-service teachers. *Mersin University Journal of the Faculty of Education / Mersin Üniversitesi Eğitim Fakültesi Dergisi*, 14(3), 1200-1221. 22p. doi: 10.17860/mersinefd.354881.

Uçar, S., and Yazıcı, Y. (2021). An exploratory research: ELT And ELL students' tendencies towards web 2.0 tools. *European Journal of Education Studies*, 8(12). doi: 10.46827/ejes.v8i12.4059

Veen, W. (2007). Homo zappiens and the need for new education systems, *Proceedings OECD Conference*. <https://fcbddde1ed8dea629de463ca294fa118baeb7cd1.vetisonline.com/Record/homo-zappiens-and-the-need-for-new-education-systems-veen-wim/10003912909>

Virkus, S., and Bamigbola, A. A. (2011). Students' conceptions and experiences of web 2.0 tools. *New Library World*, 112(11-12), 479-489. doi: 10.1108/03074801111190473

Wong, K. M., and Moorhouse, B. L. (2021). Digital competence and online language teaching: Hong Kong language teacher practices in primary and secondary classrooms. *System* 103. doi: 10.1016/j.system.2021.102653

Yildirim, R. (2013). The portfolio effect: Enhancing Turkish ELT student-teachers' autonomy. *Australian Journal of Teacher Education*, 38(8). doi: 10.14221/ajte.2013v38n8.8

Yıldırım, T. (2017). *The perceptions of EFL instructors and administrators on teacher autonomy: A case study*. (MA Thesis). Middle East Technical University, Ankara. Thesis No: 481638

APPENDICES

Appendix 1. Permission Requests from the Developers of the Scales

 **Tuğba Yalçın** Alıcı: ben 31 Ekim Pzt 00:00 (1 gün önce) ☆
Dear Rafael Alarcon, I've sent an e-mail about the usage of DIGIGLO tool you developed in my MA dissertation before (on October 24). I send this e-mail...

 **Rafael Alarcon Postigo** Alıcı: ben Yarın 11:23 (0 dakika önce) ☆ ↩ ⋮
Dear Tuğba Yalçın

I have no problem for you to use the DIGIGLO tool in your MA dissertation. Moreover, I am interested in collaborating in future research articles on the results obtained.
Regards.

 **Anita Woolfolk Hoy** Alıcı: ben 20 Ara Çar

You are welcome to use the TSES in your research as you describe below. This website might be helpful to you. It has the instrument, scoring instructions, and Turkish version. I have attached some articles as well.

<http://u.osu.edu/hoy.17/research/instruments/>

Best wishes in your work.
Anita

Anita Woolfolk Hoy, PhD

 **Tuğba Yalçın** Alıcı: ben, Etiler 10 Kas 2022 Per 23:04 ☆ ↩ ⋮
Dear William Moonaw,
I'm an MA student at the department of English Language Teaching at Sakarya University in Turkey and my supervisor Mr. Bozuyigit is added as a CC in this e-mail. I'm currently studying on my thesis and I'm interested in digital competence of English Language teachers, furthermore I aim to model the relationship between digital competence, self-efficacy, and teacher autonomy among English as Foreign Language (EFL) teachers.
I found out that the study you carried out with L. Carolyn Pearson named as "Continuing Validation of the Teaching Autonomy Scale" is appropriate for me to apply in my study in compliance with its validity and reliability. Thus, I send this e-mail to ask for your request about the use of the scale you developed in my thesis. I would like to utilize your Teacher Autonomy tool in Turkey context to assess the relationship between teachers' autonomy and digital competence levels in line with your reply to my e-mail. Thanks in advance for your time.
Regards,
Tuğba YALÇIN
Sakarya University, Department of English Language Teaching

 **Moonaw, William R** Alıcı: ben, Etiler 11 Kas 2022 Çarş 16:04 ☆ ↩ ⋮
Since this tool has been published in an open journal, you are free to use it.
William R Moonaw

Appendix 2. Ethical Permission from Sakarya University

Sayı : E-61923333-050.99-222288
Konu : 15/01 Tuğba YALÇIN

20.02.2023

Sayın Tuğba YALÇIN

İlgi : 13.01.2023 tarihli ve E--000-0 sayılı yazınız.

Üniversitemiz Eğitim Araştırmaları ve Yayın Etik Kurulu'nun 15.02.2023 tarihli ve 15 sayılı toplantısında alınan "01" nolu karar ile Tuğba YALÇIN'ın başvurusu **uygun** görülmüş ve karar örneği ekte sunulmuştur.

Bilgilerinizi rica ederim.

Prof. Dr. Murat İSKENDER
Eğitim Araştırmaları ve Yayın Etik
Kurulu Başkanı

Ek: Karar Yazısı (1 Sayfa)

Appendix 3. Research Permission Paper of Strategy Development Directorate of Ministry of National Education

SAÜ Evrak Tarih ve Sayısı: 13.11.2023-304996 Evrak Tarihi ve Sayısı:10.11.2023-E.89495816



T.C.
MİLLÎ EĞİTİM BAKANLIĞI
Strateji Geliştirme Başkanlığı



Sayı : E-49614598-605.01-89495816
Konu : Araştırma Uygulama İzni

10.11.2023

DAĞITIM YERLERİNE

- İlgi : a) Yenilik ve Eğitim Teknolojileri Genel Müdürlüğünün 21.01.2020 tarihli ve 81576613-10.06.02-E.1563890 sayılı yazısı (Genelge No: 2020/2).
b) Sakarya Üniversitesi Rektörlüğünün 07.09.2023 tarihli ve E-67236739-044-279008 sayılı yazısı.

Sakarya Üniversitesi Eğitim Bilimleri Enstitüsü İngiliz Dili Eğitimi Anabilim Dalı Yüksek Lisans Programı öğrencisi Tuğba YALÇIN'ın "Yabancı Dil Olarak İngilizce Öğretmenlerinin Dijital Yeterlik Düzeyleri, Öz-Yeterlik ve Öğretmen Özerkliği Arasındaki İlişkinin İncelenmesi" konulu çalışmasına veri sağlamak amacıyla anket çalışması yapma izin talebine ilişkin İlgi (b) yazı ve ekleri incelenmiştir.

Bakanlığımıza bağlı resmi/özel okul ve kurumlarda öğretmenlerin katılımıyla yapılması planlanan uygulamanın denetimi il/ilçe millî eğitim müdürlükleri ve okul/kurum idaresinde olmak üzere, kurum faaliyetlerini aksatmadan, gönüllülük esasına göre; onaylı bir örneği Bakanlığımızda muhafaza edilen ve uygulama sırasında da mühürlü ve imzalı örnekten çoğaltılan veri toplama araçlarının <http://meb.ai/9315nR> adresinden online olarak uygulanmasına İlgi (a) Genelge doğrultusunda izin verilmiştir.

Bilgilerinizi rica ederim.

Ercan TÜRK
Bakan a.
Strateji Geliştirme Başkanı

- Ek:
1-Onaylı Veri Toplama Araçları (18 Sayfa)
2-AYSE Başvurusu (3 Sayfa)

Dağıtım:
Gereği:
B Planı

Bilgi:
Sakarya Üniversitesi Rektörlüğüne

Bu belge güvenli elektronik imza ile imzalanmıştır.

Adres : Atatürk Bulvarı No:98 Millî Eğitim Bakanlığı 4/A
Bakanlıklar/ANKARA
Telefon No : 0 (312) 413 27 38
E-Posta: gozde.berk@meb.gov.tr
Kep Adresi : meb@hs01.kep.tr

Belge Doğrulama Adresi : <https://www.turkiye.gov.tr/meb-ebys>
Bilgi için: Gözde BERK
Unvan : Büro Personeli
İnternet Adresi: Faks:3124186401

Bu evrak güvenli elektronik imza ile imzalanmıştır. <https://evraksorgu.meb.gov.tr> adresinden d894-5cde-35db-891d-d5d3 kodu ile teyit edilebilir.

Appendix 4. Informed Consent Form and Questions Regarding Demographic Information

Digital Competence, Self-Efficacy and Teacher Autonomy of English language teachers

Dear participant,

This survey is designed for a thesis project under the supervision of Assist. Prof. Elif Bozyiğit, aiming to investigate the relationships between digital competence, self-efficacy, and teacher autonomy among English as Foreign Language (EFL) teachers working at secondary school in Türkiye. To this end, you will be asked to answer some questions about your background and related constructs.

Your answers will remain anonymous and confidential. If you prefer not to be involved in this survey, you will be free to withdraw without any consequence.

It takes around ten minutes to complete the survey.

There are no right or wrong answers, but it is highly crucial that you answer the questions sincerely. If you have any questions about the study or the instruments, you can contact the researcher Tuğba Yalçın at tugba.yalcin1@ogr.sakarya.edu.tr

You acknowledge that your voluntary responses to this questionnaire may be used anonymously for research by submitting it.

Thank you for your time and participation.

Tuğba Yalçın
MA student at Sakarya University

Background Information

1. Do you voluntarily take part in this study?

Yes

2. **Gender**

Female

Male

3. **Years of teaching experience**

...

4. **Educational background**

- Bachelor's
- Master's
- PhD

Appendix 5. Scales Employed in the Study: DIGIGLO Tool

ITEMS	Totally disagree	Disagree	Partially agree	Agree	Strongly agree	Totally Agree
PROFESSIONAL ENGAGEMENT						
I communicate fluently with students, peers and institutions by means of ICTs.						
I regularly share and receive material through one or more networks or virtual communities for teachers.						
I reflect on my pedagogical practice involving ICTs.						
DIGITAL RESOURCES						
I am able to identify, evaluate and select teaching and learning materials while respecting copyright.						
I am able to adapt materials, with permission, and use software applications to create new material that responds to my students' needs.						

I organise and manage the material my students use, protecting it and respecting legislation on privacy and copyright.						
TEACHING AND LEARNING						
I incorporate digital devices and resources into my classroom practice, planning how they will be used (for example, Storybird to develop creativity).						
I use digital technology to guide and support my students and to facilitate their interactions with one another (for example, use of Joomla and virtual tutorials).						
I use digital technologies to improve my students' collaborative learning.						
My students are able to progress with their learning and to share ideas and interact with						

classmates thanks to the ICTs that I make available.						
ASSESSMENT						
I use digital tools for both the formative and summative assessment of my students.						
I can generate, select and analyse critically my own digital activity and that of my students.						
My students enjoy using the tools I make available to them in order to get feedback on their progress.						
EMPOWERING LEARNERS						
I consider a range of tools that are suitable for different student profiles so as to facilitate the inclusion of those with special needs.						
I use alternative tools and offer a range of learning pathways so that students can learn at their own pace.						
I know how to use tools to promote students'						

development as learners: to motivate them, for practical work, for research and to develop their creativity.						
FACILITATING LEARNERS' DIGITAL COMPETENCE						
From the digital perspective, the information my students have is sufficiently comprehensive and well-structured.						
My students have a level of digital literacy in my subject area which enables them to use the available tools quickly, reliably and critically during their learning process.						
My students are able to generate their own material in accordance with Creative Commons licences and respecting copyright.						
My students are aware of the risks associated with the use of technology and their behaviour						

in this respect is civic-minded and responsible.						
My students are capable of finding solutions or alternatives to any technological challenges that emerge during their learning process.						
DIGITAL ENVIRONMENT						
In my opinion, my institution has the necessary digital software to be considered an ICT-enabled workplace.						
In my opinion, my institution has the necessary digital hardware to be considered an ICT-enabled workplace.						
In my institution there are no restrictions when it comes to improving an individual's digital experience (specific demands are met, for example, use of Apple devices).						
My institution organises courses, conferences and						

workshops on the use of digital teaching tools.						
My institution has a strategic plan for improving the research skills of teaching staff (for example, downloading statistical tools as required, offering virtual courses in scientific English, etc.).						
EXTRINSIC DIGITAL ENGAGEMENT						
My institution pays attention to suggestions made by all users across all levels (administrative staff, educators, etc.) with regard to improving and extending the use of digital technologies.						
My institution ensures that any necessary updates and improvements to software and hardware are made each year.						
My institution has a specific IT department that responds						
immediately or the same day to any problems or queries that teaching staff have with the available digital tools.						

Appendix 6. Teacher Efficacy Scale

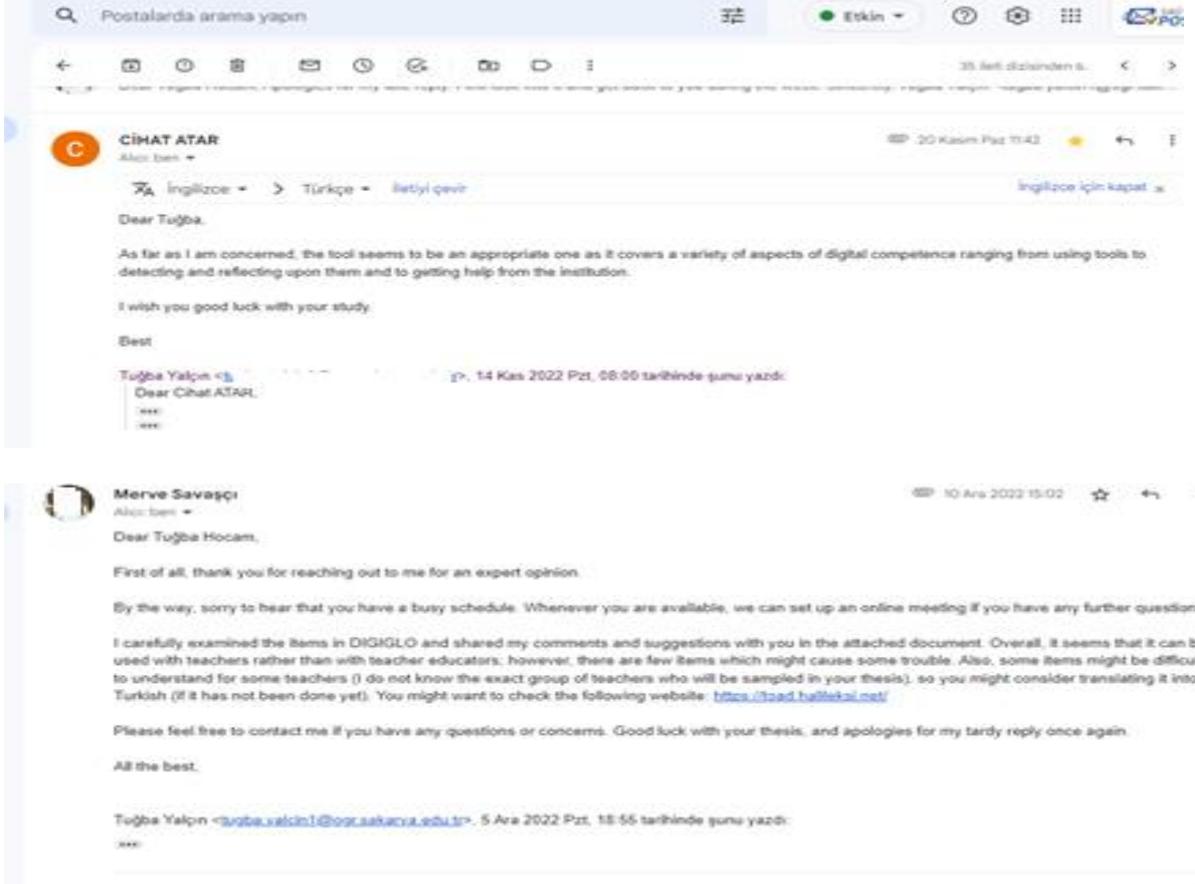
ITEMS	Strongly Disagree	Moderately Disagree	Disagree slightly more than agree	Agree slightly more than disagree	Moderately agree	Strongly Agree
1. The amount a student can learn is primarily related to family background.						
2. If students are not disciplined at home, they are not likely to accept any discipline.						
3. When I really try, I can get through to most difficult students.						
4. A teacher is very limited in what he/she can achieve because a student's home environment is a large influence on his/her achievement.						
5. If parents would do more for their children, I could do more.						
6. If a student did not remember information I gave in a previous lesson, I would know how to increase his/her retention in the next						

lesson.						
7. If a student in my class becomes disruptive and noisy, I feel assured that I know some techniques to redirect him/her quickly.						
8. If one of my students could not do a class assignment, I would be able to accurately assess whether the assignment was at the correct level of difficulty.						
9. If I really try hard, I can get through to even the most difficult or unmotivated students.						
10. When it comes right down to it, a teacher really cannot do much because most of a student's motivation and performance depends on his or her home						

Appendix 7. Teacher Autonomy Scale

Curriculum autonomy	Definitely False	False	True	Definitely True
In my teaching, I use my own guidelines and procedures.				
In my situation, I have little say over the content and skills that are selected for teaching.				
My teaching focuses on those goals and objectives I select myself.				
What I teach in my class is determined for the most part by myself.				
The materials I use in my class are chosen for the most part by me.				
The content and skills taught in my class are those I select.				
General teaching autonomy				
I am free to be creative in my teaching approach.				
The selection of student-learning activities in my class is under my control.				
Standards of behavior in my classroom are set primarily by me.				
My job does not allow for much discretion on my part.				
The scheduling of use of time in my classroom is under my control.				
I seldom use alternative procedures in my teaching.				
I follow my own guidelines on instruction.				
In my situation, I have only limited latitude in how major problems are solved.				
In my class, I have little control over how classroom space is used.				
The evaluation and assessment activities used in my class are selected by others.				
I select the teaching methods and strategies I use with my students.				
I have little say over the scheduling of use of time in my classroom.				

Appendix 8. Experts Opinion



The screenshot displays an email client interface. The top bar includes a search field with the text "Postalarda arama yapın", a status indicator "Etkin", and various icons. The main content area shows two email messages.

Message 1: From CİHAH ATAR, dated 20 Kasım Paz 11:42. The subject is "İngilizce" and the language is set to "Türkçe". The body text reads: "Dear Tuğba, As far as I am concerned, the tool seems to be an appropriate one as it covers a variety of aspects of digital competence ranging from using tools to detecting and reflecting upon them and to getting help from the institution. I wish you good luck with your study. Best,". A reply from Tuğba Yalçın is visible below, dated 14 Kas 2022 Pzt, 08:00 tarihinde günü yazdı: "Dear Cihat ATAR, xxx".

Message 2: From Merve Savaşçı, dated 10 Ara 2022 15:02. The body text reads: "Dear Tuğba Hocam, First of all, thank you for reaching out to me for an expert opinion. By the way, sorry to hear that you have a busy schedule. Whenever you are available, we can set up an online meeting if you have any further questions. I carefully examined the items in DIGGLO and shared my comments and suggestions with you in the attached document. Overall, it seems that it can be used with teachers rather than with teacher educators; however, there are few items which might cause some trouble. Also, some items might be difficult to understand for some teachers (I do not know the exact group of teachers who will be sampled in your thesis), so you might consider translating it into Turkish (if it has not been done yet). You might want to check the following website: <https://oad.halibekci.net/>. Please feel free to contact me if you have any questions or concerns. Good luck with your thesis, and apologies for my tardy reply once again. All the best,". A reply from Tuğba Yalçın is visible below, dated 5 Ara 2022 Pzt, 18:55 tarihinde günü yazdı: "xxx".