

**DIGITAL LITERACY AND LEARNER AUTONOMY READINESS AMONG
ELT FRESHMAN STUDENTS IN ONLINE EDUCATION**



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**DIGITAL LITERACY AND LEARNER AUTONOMY READINESS AMONG
ELT FRESHMAN STUDENTS IN ONLINE EDUCATION**

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ABSTRACT

DIGITAL LITERACY AND LEARNER AUTONOMY READINESS AMONG ELT FRESHMAN STUDENTS IN ONLINE EDUCATION

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This study investigated the digital literacy and learner autonomy readiness of freshmen ELT students during online education, as well as explored their perceptions about digital literacy and autonomy in online classes. Through a mixed-method design, a group of ELT freshman students (N=49) were exposed to a ten week online education and their digital literacy levels and learner autonomy readiness were examined. The quantitative data collection instruments used in the study were pre- and post-tests of Digital Literacy Scale (DLS) (Ng, 2012) and pre- and post-tests of Learner Autonomy Readiness Questionnaire (LARQ) (Nasöz, 2015). The qualitative data were collected through semi-structured interviews with selected participants (N=8). The statistical results indicated that the participants' digital literacy and learner autonomy readiness increased after a period of online education. The qualitative analysis supported these findings and revealed positive attitudes towards technology and autonomous learning in online classes.

Keywords: Digital Literacy, Learner Autonomy, Online Education, ELT.

ÖZ

BİRİNCİ SINIF İNGİLİZCE ÖĞRETMENLİĞİ ÖĞRENCİLERİNİN ÇEVİRİMİÇİ EĞİTİMDE DİJİTAL OKURYAZARLIK SEVİYELERİ VE ÖĞRENEN ÖZERKLİĞİNE HAZIRBULUNUŞLUKLARI

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Bu çalışma, birinci sınıf ELT öğrencilerinin çevrimiçi eğitimde dijital okuryazarlık ile öğrenen özerkliğine hazırbulunuşlukları ile dijital okuryazarlık ve öğrenen özerkliğine yönelik algılarını incelemiştir. Karma yöntem tasarımı ile bir grup ELT birinci sınıf öğrencisi (N = 49) on haftalık çevrimiçi eğitime tabi tutulmuştur ve dijital okuryazarlık seviyeleri ve öğrenen özerkliğine hazır olma durumları incelenmiştir. Araştırmada kullanılan nicel veri toplama araçları, ön ve son test formatında verilen Dijital Okuryazarlık Ölçeği (DOÖ) (Ng, 2012) ile ön ve son test formatında verilen Öğrenci Özerkliği Hazırlık Ölçeği (ÖÖHÖ) (Nasöz, 2015)'dir. Nitel veriler, seçilen katılımcılarla (N = 8) yarı yapılandırılmış görüşmeler yoluyla toplanmıştır. İstatiksel sonuçlar, katılımcıların dijital okuryazarlığının ve öğrencinin özerk öğrenime hazırlığının çevrimiçi eğitim döneminden sonra arttığını göstermiştir. Nitel analiz bu bulguları desteklemiş ve çevrimiçi derslerde teknoloji ve özerk öğrenime yönelik katılımcıların olumlu tutumlarını ortaya çıkarmıştır.

Anahtar Kelimeler: Dijital Okuryazarlık, Öğrenci Özerkliği, Çevrimiçi Eğitim, İD

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Chapter 1

Introduction

This chapter introduces an overview of the study aiming at investigating the relationship between digital literacy perceptions and learner autonomy beliefs of freshman English language teaching students at a foundation university. First, it gives details about the background of the study, followed by the statement of the problem and the purpose of the study. Furthermore, definitions and research questions are stated in addition to the limitations of the study. An overview of the methodology section can be found at the end of this chapter.

1.1 Background of the Study

Technological innovations have been emerging day-to-day and entering our lives more than ever before. As these innovations are adopted by the populace, it is no surprise that they affected education as well. Blended-learning, Computer-assisted language learning (CALL), online education, and similar terms have been around for some time but they are increasingly becoming more common to meet the demands of Generation Z (Gen Z), which is a term that encompasses individuals who were born in the late 1990s and early 2000s (Torocsik et al., 2014). Mohr and Mohr (2017) stated that it can be stimulating to bridge the gap between older and younger generations but it provides an opportunity to think about what the current learners are like and what their needs are.

21st-century learners' needs are changing in line with the modern society and contemporary requirements of business life. Knowledge has become vital in the 21st-century and people need to be proficient in certain skills to be able to enter the workforce. In general, 21st-century skills include collaboration, communication, digital literacy, citizenship, problem-solving, critical thinking, creativity, and productivity. These skills are included in all frameworks and the differences usually stem from categorizing and labeling the competencies. At the core of each framework lies ICT (Information and communication technology)-related competencies. This usually refers to information literacy, technological literacy, and ICT literacy

Information literacy is concerned with how to access information effectively and efficiently and how to use it creatively (Voogt & Roblin, 2012). Abilities related to the use of technology are referred to as ICT literacy while technological literacy can be stated as the ability to use and understand the technology and to develop strategies to achieve goals (Anderson, 2008). The main difference between ICT literacy and technological literacy is that ICT literacy is related to the efficient and effective use of digital technologies while technological literacy is concerned with understanding technological principles to solve problems.

Most frameworks suggest the need to integrate these 21st-century skills and promote the use of ICT in the curricula to improve student learning and to enhance 21st-century competencies. The prominence of these skills became apparent during the 2020 global pandemic, which led to huge changes all around the world, especially in business life and education. While the ability to work and study online has been around for decades, it has never been considered as essential as it has in 2020. During the Covid-19 pandemic, working remotely has become the norm for many companies as online education has become the norm for many educational institutions. This sudden and drastic change of the system has affected both educators and students in different ways. However, it seems to be clear that online education and the technological prowess of both teachers and students need to be refined and improved to adapt to the ever-changing needs of the 21st century.

As Gen Z'ers are considered the first digital natives (Rothman, 2016), the term digital literacy emerged and is considered a necessary skill of this century. According to Jones and Hafner (2012), practices of communicating, thinking, relating, and being associated with digital media were identified with the term digital literacy. As digital natives adopted technology early on, Ng (2012) suggested that the embracing of ICT by digital natives in mobile devices and social media platforms demonstrated that they possess a certain level of digital literacy, varying from very simple creations to complex media creation.

As a result of online education and the digital literacy proficiency of learners, learner autonomy is another concept that bears relevance in today's world. One of the most quoted definitions of autonomy is the "ability to take charge of one's learning" (Holec, 1981, p.3). Another definition includes self-instruction, in which learners study without the direct supervision of a teacher (Dickinson, 1991). Freedom,

decision-making, choice, and the idea that students should take responsibility for their learning have been associated with autonomy, especially in higher education (Wright et al., 2004). This is especially relevant in 2020 pandemic conditions, as learners are expected to manage their learning on their own more than before.

To summarize, ICT-related competencies play a pivotal role in a world where tertiary education consists of digital natives as well as in-service teachers. Combined with the fact that online education is prevalent in 2020 and that learners are expected to take more responsibility for their learning, autonomy and digital literacy are related concepts to investigate.

1.2 Statement of the Problem

Learners always have been required to acquire the necessary skills to function in society after completing their education. While these required skills differed on the conditions of specific times, they were always in line with the necessary abilities to succeed in business life and contribute to society. One of the main differences in the 21st century is how interconnected and global our society has become, not just in terms of international companies and countries, but also on an individual level. As a result of this, 21st-century skills became crucial for the new generation and there has been a recent push for improving students' 21st-century literacy skills (List, Brante & Klee, 2020). Therefore, educational institutions started shifting their focus on incorporating these skills into their curriculums.

As a consequence of being more interconnected than ever before, the importance of foreign language proficiency is becoming clearer for people in many fields of work. Together with the evolving needs of this generation, language teachers themselves are putting more emphasis on improving their proficiency in 21st-century literacy skills. As teachers need to keep up with the latest developments, the field of teacher education becomes a focal point in the process. Since current teenagers and young adults are considered digital natives (Rothman, 2016), digital literacy is one of the crucial skills that both in-service and pre-service teachers are suggested to possess. While current ELT undergraduate students are mostly individuals that are Gen Z, research suggests that they have varying degrees of proficiency in digital literacy (Ng, 2012) so observing and examining the digital literacy level of ELT students is essential. In the current Covid-19 pandemic, online education has been troublesome for many higher

education institutions in Turkey and the digital literacy levels of professors and students might have played a part in this.

Many research studies agree that there is a need for a different approach that students need to take in online education (Bernard et al., 2004; DiMaria-Ghalili, Ostrow, & Kim, 2005). Commonly, online education consists of online learning platforms featuring learning materials, video recordings, tasks, and assessment tools. While it has been determined that online learning platforms influence learning (Chu & Chu, 2010), factors that affect learning and learning behavior didn't gain as much attention. Autonomy is one of these factors (Prior et al., 2015) that should be considered in online education. Autonomy and digital literacy are two factors that have been associated with each other (Ting, 2015).

Despite autonomy and digital literacy being important learning influences, there hasn't been enough research on the relationship between these factors in a Turkish online higher education setting for undergraduate ELT students.

1.3 Purpose of the Study

Online education is an important factor to examine in the Covid-19 pandemic situation as online education is the current preferred method of instruction. Most of the participants in this research had not experienced online instruction before the pandemic and currently are undergoing their first year with a new hybrid system. Collecting data intermittently throughout the semester is aimed to act as a treatment for digital literacy as students are required to use an online learning platform and given online research projects that require proficiency in digital literacy. Furthermore, autonomy has been noted as important in online education success (Yen & Liu, 2009).

The main objective of this research is to contribute to the literature on learner autonomy and digital literacy, examine the relationship of these factors in teacher education, provide insights on higher education context in Turkey, and lastly reveal the perceptions of ELT undergraduate students on digital literacy and their autonomy levels.

1.4 Research Questions

The study set out to address five research questions.

- I.* Does online education have any impact on the digital literacy levels of ELT freshman students?
- II.* Does online education have any impact on the autonomy levels of ELT freshman students?
- III.* Is there any significant relationship between the digital literacy level and autonomy level of the participants?
- IV.* What are the perceptions of English language ELT freshman students on digital literacy?
- V.* What are the perceptions of English language ELT freshman students on learner autonomy?

1.5 Significance of the Study

Changes to instructional methods are always challenging to adapt for both learners and teachers. With the rise of technology and new applications of technology in education, teachers found diverse ways to promote learning. This transformation has been going on for decades, yet the sheer speed of this change required quick adaptation. The role of teachers also changed dramatically in line with this transformation as students became more independent and self-managers of their learning (Tulay, 2019), and this challenged both curriculum designers and teachers alike. To promote independence as well as integrate technology into the classrooms, especially during these times where online education is becoming the new norm, educators need to approach these issues from a different lens. Digital literacy and autonomy are crucial factors to examine in this context so that learners can become independent learners who are proficient in ICT and can adapt to the needs of the 21st century.

It is expected that language teachers themselves should be proficient in digital literacy and autonomous learners themselves in order to promote and enhance these factors in their classrooms. Prensky (2001) states that educators should think about how to teach past and future content in the language of digital natives. Pre-service teachers' digital literacy will help them become proficient educators in terms of integrating ICT in their classrooms but also understand the needs of their digital native

students better. Autonomous pre-service teachers will be able to integrate digital systems or activities so that their learners can be more independent (Ozden, 2018). All these factors signify the importance of research in this field, especially in the faculties of education where prospective teachers are educated. As a result, to the knowledge of the researcher, there being no studies on the relationships between learner autonomy and digital literacy in ELT students in Turkey warrant the need for this study.

Online education is another factor to examine in this situation as it is the current preferred method of instruction. Most of the participants in this research had not experienced online instruction before the pandemic and currently are undergoing their first year with a new hybrid system. Collecting data intermittently throughout the semester is aimed to act as a treatment for digital literacy as students are required to use an online learning platform and given online research projects that require proficiency in digital literacy.

Based on these overviews, this study will provide in-depth information and pedagogical implications about pre-service and in-service education programs for the results could shed light on the digital literacy level and autonomy states of participants. Further implications could include policy makers and curriculum designers in higher education.

1.6 Definitions

ICT: Use of computing devices such as desktop computers, laptops, handheld computers, software, or Internet in schools for instructional purposes (Hew & Brush, 2007)

Digital Natives: Individuals who are versed in the digital language of computers, video games, and the Internet. (Prensky, 2001).

Digital Literacy: Practices of communicating, thinking, relating, and being associated with digital media (Jones & Hafner, 2012).

Learner Autonomy: Ability to take charge of one's learning (Holec, 1981).

Gen Z: Group of individuals born in 1998 to 2010 (Torocsik et al., 2014).

EFL: English as a foreign language, which differs from ESL in terms of language functions, learning purposes, language environment, and learning methods (Stern, 1983)

Chapter 2

Literature Review

Technology has been at the forefront in the 21st century and consequently, ICT and digital literacy are two terms that have been emphasized by both practitioners and researchers. As we move away from the traditional way of teaching, learners are expected to take charge in their own learning compared to the past, and because of this, learner autonomy is another term that attracts researchers' attention. In this chapter, a brief background of teacher education, online teacher education, and generation Z will be examined. The background of digital literacy followed by the implications of digital literacy and its implementation in teacher education will also be included. Next, there will be an overview of autonomy and pre-service teacher autonomy and its implications in teacher education. Finally, the relationship between autonomy and digital literacy will be discussed in consideration of the studies that have been conducted so far in the field.

2.1 Second Language (L2) Teacher education

Second language (L2) teacher education can be described as the field of professional activity in which teacher candidates learn how to teach a second language (Richards, 1987). Generally, the formal activities are referred to as teacher training while the activities that are voluntary and on an individual basis are commonly referred to as teacher development. However, the term teacher education encompasses experiences and activities through which individuals learn how to teach a language (Duisembekova & Özmen, 2020). Richards (1987) coined the term Second Language Teacher Education and stated that the objective of second language teaching should be to provide opportunities for novices to get the competencies and skills of effective teachers. This indicates the importance of an effective teacher education program and reflects the need for continuous research in this field in order to adapt to both the requirements of the 21st century and the needs of student teachers.

The report on the best-performing school systems (McKinsey and McKinsey, 2007) states that the main factor in student success is the quality of teachers. Kennedy (1999) points out that the aim of pre-service teacher education is to provide knowledge to the students so that they can come up with their own ideas and thinking that will lead them in their profession. Therefore, pre-service teacher education as a concept has been changing and gained popularity in recent years. Education standards and policies regulate teacher education programs and the effectiveness of teacher education depends on these factors (Duisembekova & Özmen, 2020).

In the 2014 Teacher Prep Review, Greenberg, Walsh, and McKee (2013) emphasize that the reason some teacher education programs are insufficient in training effective teachers is because teacher candidates are not trained in specific skills and strategies. This statement is parallel to the findings of other studies that found inefficiencies in teaching training programs (Greenberg et al., 2014; Wang & Huang, 2016). Another criticism towards teacher education programs is based on technology integration as all pre-service teacher education programs offer elective or mandatory technology courses but it is far from being fully integrated (Öztürk & Aydın, 2018).

Based on the overviews, teacher quality is one of the most important aspects of successful school systems, and thus, pre-service teacher education programs are essential. It is also important to integrate technology into pre-service teacher education curriculum to prepare them for the necessities of modern classrooms. In order to ensure the training of effective and skilled teachers, it is necessary to maintain a high quality in teacher education programs.

2.1.1 Online teacher education. Online education is the action of delivering course materials and instruction to learners by using Internet technology (Demiray, 2011) and recently has been gaining popularity. However, online education is not a new and emerging concept. Online education is represented in the teacher education sector all around the world during the Covid-19 pandemic and research suggests that online delivery in higher education brings out different benefits and challenges that are associated with this method of instruction (Downing & Dymont, 2013). Furthermore, There are great opportunities and challenges in online education to improve student learning and engagement (Tomas et al., 2015). Fan and Lê (2011) suggested that: web-based learning can satisfy students with different preferences and needs, and that it has

better potential than face-to-face learning as it can be adapted to various learning styles, content, and paces.

Online education has become an important tool to prepare teacher candidates for future teaching in classrooms and online (Archambault, DeBruler & Freidhoff, 2014). In their study, Archambault, DeBruler, and Freidhoff (2014) investigated teacher quality in online and blended learning in K-12 settings. Analyzing relevant literature, existing state laws, and conducting interviews with stakeholders were the data collection methods. It was concluded that all teachers need at least basic training for online teaching and that online and blended teaching should be integrated into pre-service and in-service teacher training programs. It was further suggested that states should create partnerships with online course providers to train teachers effectively.

In a study conducted by Caywood and Duckett (2003), 140 students in a teacher education program were examined to determine any significant differences between online and on-campus instruction. Half of the courses were offered online while the rest could be taken on campus and participants could choose which ones they preferred. In both groups, no significant difference in initial learning and performance could be found, which could be seen as an indication of the effectiveness of online education. In another study, Norton and Hathaway (2014) investigated the effectiveness of online teacher education via Blackboard and the COPLS one-on-one model. While both of these methods are online instruction, the results revealed that the participants perceived both as a high-quality learning experience. Norton & Hathaway further argued that self-regulation, the role of the instructor, and other factors affecting learners' perceptions played important roles in the effectiveness of online teacher education.

In an exploratory study, Downing and Dymont (2013) investigated the readiness and preparation of teacher educators for online teaching in a fully online teacher education program in Australia. 27 teacher educators participated in the study and the results revealed that the majority of teacher educators lacked technological and pedagogical competence that is required to teach online and a lack of confidence was present in the participants.

Luo, Murray, and Crompton (2017) investigated pre-service teachers' perceptions of online authentic learning experiences and how technology facilitated the online learning process. In this design-based research, 48 pre-service teachers

participated in the study divided into two classes of the same course, taught by different instructors. The online instruction was supported by various digital tools such as Blackboard, web 2.0 tools, blogs, etc. Overall, the participants had positive perceptions about online learning and that use of technology increased their technical competence. While a minority of participants stated that they preferred face-to-face education, the majority favored online education. One participant stated that they used to fear teaching online but the integration of technology helped them develop their confidence in using technology (Luo, Murray & Crompton, 2017).

In brief, it can be inferred that online education in teacher education programs is a topic that warrants further investigation as there is a need for integrating online training into teacher education programs, the lack of technical skill in teacher educators, and generally positive perception towards online education by pre-service teachers. Lack of technology integration is one of the shortcomings of many teacher education programs and it is a vital area to focus on in a world that is becoming more and more integrated with technology. It can be understood that in-service teachers have a need for proficiency in online education tools and methodologies as it is becoming more and more widespread. As a result, learning digital tools and improving ICT competence in undergraduate studies is invaluable for pre-service teachers.

2.2 Generation Z

The typical Generation Z (Gen Z) person (Schroer, 2008) or, as often referred to as, digital natives (Rothman, 2016) is the first generation that was born into a world that truly global and interconnected. Gen Z encompasses all those who were born in the late 1990s and early 2000s (Torocsik et al., 2014). Technological innovations were accelerating during this period and it is only natural that they would be affected by this. A survey conducted with 1300 middle and high school students revealed that 40% of them wished to pursue a career related to technology (De-Menendez, Diaz & Menendez, 2020).

Many scholars investigated Generation Z learners and their characteristics (Poláková & Klímová, 2019; Li, Wang & Lei, 2020; Seemiller and Grace, 2016). In a study conducted by Seemiller and Grace (2016), determination, loyalty, open-mindedness, responsibility, and thoughtfulness were characteristics shared by more than 70% of the participants. Seemiller and Grace (2016) further argued that Gen Z is

the most diverse generation compared to the previous generations. Furthermore, the findings revealed that they are motivated by making a difference in the world and by taking responsibilities, which differs greatly from millennials who are motivated by feedback and rewards. Additional findings included a difference in learning preferences. Gen Z learners preferred intrapersonal learning while millennials were in favor of group learning. It was also apparent that they favored video-based learning and real-world applications of the content (Seemiller & Grace 2016).

Currently, the earliest members of this generation are in their final years in secondary school, and universities started to encounter Gen Z students. Colleges of education will educate these students to be teachers and this makes it vital to understand their characteristics (Carter, 2018). As indicated by experts (Danielson, 2007; Eggen & Kauchak, 2015), to educate a generation more efficiently, we must first understand their background experiences, shared understandings, and previous learning experiences.

One characteristic that could be examined is their affinity for mobile technologies. Use and sales of mobile devices have nearly doubled in the last decade (Statcounter, 2016) and this could be linked with the new generation's preferences. In a quantitative preliminary study conducted by Poláková and Klímová (2019), the effects of mobile technology use in the classroom were investigated. 20 second-year university students participated in the study and the sample was divided into a control group and an experimental group, which used mobile devices in the learning process. The results revealed that mobile technology usage improved students' vocabulary. However, the results also indicated that being a member of Gen Z does not make one automatically interested in technologies, as there was a sizable number of participants who preferred a more traditional teaching method (Poláková & Klímová, 2019). Furthermore, Li, Wang, and Lei (2020) investigated the professional development needs of digital native and digital immigrant teachers and concluded that, while digital natives were more familiar with basic technology, they still required training for effective integration of technology in their classrooms. This supports Poláková and Klímová's (2019) findings that not every generation Z member is interested or proficient at technology.

On the other hand, in a quantitative study conducted in the U.S. on technology preparation for Gen Z pre-service teachers, 70 participants were included in a survey

on their opinions about and experiences with technology integration in K-12 level classrooms. 96,4% stated that they owned and started using computers before sixth grade and most participants spent 2-4 hours a day on computers. Furthermore, 45,5% of the participants were neutral when asked how much they are interested in technology (Lei, 2009).

To wrap up, there is a need for technology integration for generation Z. It can be said that pre-service teachers will support the educational system to meet this requirement and that ICT (Information Communication Technology) must be incorporated into school systems to provide opportunities for learners so the learners can utilize these for instruction. Therefore, understanding the differences between generation Z and previous generations is essential to facilitate more effective instruction. Integrating technology was shown to be more effective than traditional instruction.

2.3 Digital Literacy

Digital literacy refers to the multiplicity of literacies associated with digital technologies, which is a subset of electronic technologies such as software, and hardware used for educational or personal purposes (Ng, 2012). To exemplify, computers, mobile devices, smartphones, interactive whiteboards, etc. as examples of such technologies. A Global Framework of Reference on Digital Literacy Skills (2018) states that descriptions of digital literacy differ. However, one of their accepted descriptions is that digital literacy is a literacy greater than the sum of information literacy, computer or ICT literacy, media literacy, and internet literacy. It is further stated that it is an emergent literacy stemming from the aforementioned literacies.

It is quite clear to see that digital literacy is required in all areas of professional activity as progress necessitates a different level of competencies from a modern individual (Korableva et al., 2019). The widespread use of the internet in all business sectors and the prevalence of the internet in our private lives (Ata & Yıldırım, 2019) is a testament to this need. Digital literacy is also conceptualized as ‘‘new media literacy’’ (Özcan, 2017), in which we can include existing and emerging social media platforms used for educational and personal purposes. Moreover, as digital technology became more and more prevalent, the concept of ‘‘digital fluency’’ emerged, which describes the ability to reliably use internet tools, evaluate the content, and question

contents' reliability and validity (Miller & Bartlett, 2012). All these definitions and related concepts of digital literacy are becoming focal points of research in many fields, including education.

Many studies investigated various factors that may be affecting learners' digital literacy levels (Gobel et al., 2014; Ng, 2012; Son et al., 2017). In a survey-based study with the participation of 51 undergraduate students in Australia, Ng (2012) investigated their digital literacy skills. It was reported that new technologies were easily adapted by the learners, but they did not use online tools for educational purposes. The results of this study show that there is a need for more opportunities with meaningful purposes so that students can use educational technologies more. In a different study, Gobel et al. (2014) conducted a study with 337 Japanese first-year students using a 75-item questionnaire on students' use of digital technology in academic and non-academic settings. The results revealed that the students were very limited in their use of technology while having access to many different technologies easily. The results suggested that this could be due to a lack of confidence in themselves. Another investigated factor was the students' computer and mobile skills. The students' self-reported lack of computer skills and lack of confidence in this area suggested that traditional learning is still more preferable to them and that they might just not be ready for digital learning.

In another setting, Son et al. (2017) conducted two studies, one with 100 international EAP students' participation and the other with 70 Japanese EFL students, on digital literacy. The questionnaire investigated digital literacy in different dimensions, such as confidence, perceived skill, frequency, and purpose. While the results of both studies differed in certain ways, the researchers stated that all participants were aware of and interested in using digital devices. While the first group's (EAP students) self-assessment on their digital skills was higher than the second group (EFL learners), the results showed that the second group's digital skills were higher than others' were. The researchers stated that self-perception and actual knowledge do not always go hand-in-hand and the more skilled group did not rate themselves as high. It is claimed that the expectations and needs of students are different and need to be taken into account when it comes to digital literacy.

In brief, digital literacy is one of the 21st-century skills and essential in professional activities. It encompasses skills associated with digital technologies, such

as social media and ICT. Varying factors such as confidence, lack of opportunity and misperception, and preferences are reported as determining factors in utilizing digital literacy and related skills.

2.4 Digital Literacy as a 21st Century Skill

Improvements and progress in technology and science have caused fundamental changes in our society. Individuals are required to have certain knowledge on different subjects and acquire new skills, which are called 21st-century skills (Ciğerci, 2020). While 21st-century skills have been defined by various organizations (P21, EnGauge, OECD, ISTE, ATCTS), the reports suggest that 21st-century skills can be outlined as cognitive skills, sociocultural skills, self-efficacy skills, and technology skills. Creativity, critical thinking, and motivation are included under cognitive skills while collaboration, communications, and working with different groups are classified under socio-cultural skills. Technology skills include information, media, and technological literacy (Ciğerci, 2020). In Table 1, a comparison between six frameworks are shown in terms of 21st-century skills:

Table 1

Comparison of Six Frameworks in terms of 21st-Century Skills (Voogt & Roblin, 2010)

Mentioned in all frameworks	Mentioned in most frameworks (P21, EnGauge, ACTS, and NETS/ISTE)	Mentioned in few frameworks	Mentioned only in one framework
Collaboration Communication ICT literacy Social and/or cultural skills; citizenship	Creativity Critical thinking Problem-solving Develop quality products / Productivity (except in ATCS)	Learning to learn (ATCS, EU) Self-direction (P21, En Gauge, OECD) Planning (En Gauge, OECD) Flexibility and adaptability (P21, EnGauge)	-Risk-taking (En Gauge) - Manage and solve conflicts (OECD) - Sense of initiative and entrepreneurship (EU) -

As can be seen in Table 1, the frameworks (P21, ACTS, EU, OECD, En Gauge, ISTE) differ from each other in terms of which skills are included. While skills such as flexibility, planning, adaptability, core subjects (maths, science, etc.), self-direction and, history and arts can be found in certain frameworks, creativity, critical thinking, problem-solving and productivity are skills included in most frameworks. The common skills between all frameworks are collaboration, communication, ICT literacy, and social skills/citizenship. Certain skills are mentioned in each framework such as risk-taking (En Gauge), managing and solving conflicts (OECD), sense of initiative and entrepreneurship (EU), interdisciplinary themes (P21), and some core subjects which are economics, geography, government, and civics (P21) (Voogt & Roblin, 2010).

In conclusion, the number of times a certain skill is mentioned in a framework could be used as an indication of its importance. Thus, it can be inferred that skills related to technologies are seen as required in terms of 21st-century skills, and the fact that all frameworks included ICT skills is a testament to this.

2.4.1 Digital literacy in international context. For in-service teachers, Computer Assisted Language Learning (CALL) and Mobile Assisted Language Learning (MALL) are terms that come up together with digital literacy. CALL can be described as the interactive use of technology in classrooms (Beechler, & Williams, 2012) and MALL refers to the use of mobile technology (Miangah & Nezarat, 2012). It has been suggested the CALL provides opportunities for learners by facilitating language use (Stickler & Shi, 2016), and the successful implementation of CALL, MALL, and related implications can be linked with teachers' digital literacy levels.

There has been a number of research on the digital literacy of in-service and pre-service teachers (Cote & Milliner, 2018; Meerza & Beauchamp, 2017; Ngo & Eichelberger, 2019; Son et al., 2011; Waldren, 2019). First, Son et al. (2011) investigated the computer skills of Indonesian EFL teachers that teach in a range of education levels. The study revealed that teachers' skill at applying computer technologies in their class is limited whereas their perception of their own ability and their attitude towards computer technology are high. In a different setting, Cote and Milliner (2018) conducted a study with 42 Japanese EFL teachers of a private university and investigated their digital literacy levels. The results reported that

teachers had, in general, a very good understanding of computers and related skills, and had a favorable perception towards incorporating technology into the classrooms. However, the participants noticeably lacked experience in certain areas, such as online video conferencing, online discussions, spreadsheet use, wikis, computer games, and blog applications. It was also found that the participants improved their digital literacy mostly through informal means and not through workshops and ICT courses.

In a study carried out by Meerza and Beauchamp (2017), factors influencing attitudes towards ICT were investigated. The Technology Acceptance Model (TAM) was applied to examine these factors on 717 undergraduate students at two universities. The findings revealed that the positive attitude of participants depended on the usefulness and easiness of to use of the ICT tools.

In a similar study, Ngo and Eichelberger (2019) investigated college students' attitudes towards ICT use for learning English. With a large sample size of 928 Vietnamese non-English major students, quantitative data was collected via questionnaires. The findings showed that one important factor influencing attitude was the comfort level, with those more comfortable with technology having more positive attitudes towards ICT.

Furthermore, Waldren (2019) conducted a study on teachers' attitudes on mobile technology use and one of the findings of the study was that digital literacy is the main factor in being able to implement mobile technologies in the classroom. Similar to the previous studies, the participants reported that they felt confident and digitally literate. However, the majority of the participants also claimed that they require further training for MALL. It was concluded that more training is needed for the implementation of MALL successfully.

In conclusion, as the literature suggests, in-service teachers generally have positive perceptions of technology. While the attitude towards technology use is positive, teachers' perception of their ability and their actual ability in applying technology for educational purposes does not seem to correlate. As a result, there is a clear need for more training to incorporate technology effectively, both for pre-service and in-service teachers.

2.4.2 Digital literacy in the Turkish educational context. There have been several studies on digital literacy in the Turkish educational context (Hol & Aydın,

2020; Yildiz, 2020; Yukselir & Yuvayapan, 2019). Yukselir and Yuvayapan (2019) conducted a qualitative study on 136 EFL university students' and 27 instructors' perceptions of digital literacy. The findings suggested that instructors and students perceived digital literacy skills differently. Students considered DL as a tool to reach and analyze information on the internet. On the other hand, instructors perceived these skills as a tool for social interaction and communication. However, the general perception of digital tools was positive for both instructors and students.

Moreover, Yildiz (2020) carried out a phenomenology study on the opinions of academicians on digital literacy. Through semi-structured interviews with 10 academicians, the findings suggested that the awareness for the importance of digital literacy is high and academicians are open to more training and lifelong learning in this matter. It was also noted that academicians are aware of potential negative impacts of technology, especially if not used correctly.

In a similar setting, Hol and Aydın's (2020) quantitative study on EFL teachers' beliefs and engagement with technology reported similar findings to the aforementioned studies. 563 in-service EFL teachers working in different parts of Turkey were investigated in terms of four categorized beliefs (importance, use, context, and expertise) on the use of digital technology. The researchers concluded that teachers share a positive view on technology use in all categories and teachers' beliefs remained consistent in all age groups, experience level, and gender. Similar to the previous studies (Yildiz, 2020; Yukselik & Yuvayapan, 2019), Hol and Aydın (2020) highlight the importance of ICT training and conclude with the need for more training implementations in institutions.

In brief, the findings of studies on digital literacy in the Turkish setting show similar results to the international studies. Teachers seem to have a positive outlook on digital technology, yet it is clear that there is a need to create more opportunities for ICT training. Awareness of the importance of digital literacy is high amongst educators in all age groups and education levels, so the generational difference seems to not matter in this context.

2.5 Digital Literacy in Teacher Education

From a number of studies, it can be understood that ICT usage in the classroom is limited and that it is mostly used as a means of preparation outside of the class

(Dong, 2016; Orlando, 2013; Ibieta et al., 2017). Incorporating new technologies into the teaching and learning process requires innovative thinking and necessitates teachers to be proficient at learning and knowledge technologies (LKT), which is related to the use of technologies as instruments to facilitate learning and acquire knowledge (Gómez-Trigueros et al., 2019). Various research studies both in the international and Turkish context on digital literacy in teacher education have been carried out over the years, which are summarized in detail in the next part of this thesis.

2.5.1 Recent research on digital literacy in teacher education in international context. Digital literacy in teacher education is a topic investigated in an international context through different studies (Gill et al., 2015; Liz & Adriyanti, 2020; Valtonen et al., 2018). To illustrate, Gill et al. (2015) prepared a thorough case study in which they investigated pre-service teachers' preparedness to use ICT development through their degree program. 11 pre-service teachers participated and the study took place over four years with the data having been collected via semi-structured interviews and analyzed according to Taylor's model (Taylor, 2004). The findings showed that early on in their education, participants realized their shortcoming but lacked deeper reflection to link the ideas with their personal experiences. Another point to note was that participants' ICT skills were not on par with their ability to incorporate these skills into teaching. Some participants had high ICT skills but had trouble with the practical applications in the classroom. Another important conclusion was that students tended to apply a method they have seen in their lectures to their own teaching, such as using PowerPoint presentations for teaching primary level students. This lack of questioning the applicability of certain strategies usually happened early in their education. The obtained findings stated that university assessment tasks requiring them to use ICT provided substantial value and highlighted the importance of aligning university assessment and placement expectations.

Furthermore, Liza and Andriyanti (2020) investigated digital literacy readiness and perception of 54 ELT (English Language Teaching) graduate students through a mixed-method study. The overall perception of participants towards digital literacy was reported as very positive. However, the results revealed that perception, DL readiness, and the ability to apply technological devices in the classroom were not always in line and related.

In another study, Valtonen et al. (2018) explored the differences in pre-service teachers' readiness and knowledge to use ICT in education with a sample of 267 first-year pre-service teachers in Finland. In this quantitative study, participants' TPACK was analyzed via a questionnaire in different clusters. Results showed that technological content knowledge was the weakest area for the participants. The participants stated that their strongest areas were technological knowledge and pedagogical knowledge, which indicates that they need the necessary knowledge to combine these two areas to use ICT in education effectively.

Guillén-Gámez et al. (2019) examined the ICT use of pre-service teachers and whether age, gender, and motivation affect their ICT use. 134 pre-service foreign language teachers partook in this study. It was reported that the participants had medium-low development of pedagogical digital competence, meaning they were not proficient in employing technologies for educational purposes. It was noted that the participants reported high interest in using technologies, but their use of technologies pedagogically was inconsistent. Researchers also note that the lack of digital competence could be due to the lack of digital competence of the teaching staff and their hesitance to use new technologies. Finally, motivation was found to be the most impactful variable in ICT use, followed by age.

In conclusion, pre-service teachers have a positive attitude towards technology and ICT use, however, their attitude and actual competence do not correlate. Lack of digital competence and overall technological proficiency stem from different reasons such as motivation, age, lack of technology integration in the curriculum. From the literature, it can be inferred that pre-service teachers mostly fail to integrate their digital proficiency into an educational context.

2.5.2 Recent research on digital literacy in teacher education in Turkish higher educational programs. In Turkish higher education programs, the media literacy course is an elective course in most programs and the course covers information literacy, internet, and social media use as well as popular cultures, gender roles, media, and so on (Ata & Yıldırım, 2019). However, international reports suggest that contemporary teachers have a low level of digital literacy (Dashtestani, 2014; Milliner & Cote, 2018). Digital literacy in pre-service teacher education was also investigated in the Turkish educational context in a number of studies as well (Ata &

Yıldırım, 2019; Çam & Kiyici, 2017; Çebi & Reisoğlu, 2020; Dedebali, 2020; Özüdoğru & Çakır, 2020).

To begin with, Özüdoğru and Çakır (2020) investigated opinions of pre-service teachers on the uses of digital storytelling in literacy education with a sample size of 32 in a state university in Turkey. The findings supported the findings of similar international studies, which stated that pre-service teachers have positive opinions about integrating technology. While participants found digital storytelling useful, they also struggled with using the software.

Another study investigating perceptions of digital literacy was conducted by Çam and Kiyici (2017). A 30-item digital literacy questionnaire including 5 dimensions (information literacy, visual literacy, software literacy, technology literacy, and computer literacy) was administered to a sample of 354 pre-service teachers, studying in different departments, in a state university in Turkey. As for the variables affecting digital literacy, gender was reported to be one as male pre-service teachers had significantly more media literacy and computer literacy than female pre-service teachers.

In a parallel study, Dedebali (2020) carried out a study on the analysis of digital literacy and metaphoric perceptions of pre-service teachers. 297 pre-service teachers participated and data was collected via a digital literacy questionnaire and metaphors, in which participants defined digital literacy. The participants were in different departments, such as preschool teaching, science teaching, classroom teaching, Turkish language teaching, and elementary maths teaching. The results did not show any difference between digital literacy scores and departments. However, there was a difference in the device ownership and which grade they were as well as a slight difference in male and female participants, with males showing higher levels of digital literacy. The level of digital literacy was found to increase each year, the reason being suggested as the technology courses students have to take each year. Through analyzing the metaphors of students, different categories were established, such as vitality, integrity, infinity, and guidance. Researchers concluded that these reflect the positive perceptions of the participants.

As can be deduced from the literature, age, gender, department/branch, and grade are some variables investigated in the context of digital literacy. Another variable that could be investigated in digital literacy is personal income. In Çebi and

Reisoğlu's (2020) study, 518 pre-service teachers from 61 different universities in Turkey were investigated in terms of their perceptions of digital literacy. Female pre-service teachers outperformed male pre-service teachers in the digital competence areas of communication and collaboration while males surpassed females in the other categories (problem-solving, content creation, safety, data literacy). Furthermore, results showed that digital content creation and problem-solving were two areas that students were the least proficient. Finally, the study concluded that there was a clear difference in attitudes towards digital literacy, perceived competence, and actual competence.

In a mixed-method design on perceptions and views of pre-service teachers on digital literacy, Ata and Yıldırım (2019) examined the results of 295 pre-service teachers, enrolled in different departments of a university in Turkey. Significant differences in digital literacy levels were reported in terms of genders, majors, and frequency of internet use. The male participants seemed to have an easier time dealing with problems compared to their female counterparts. Moreover, pre-service teachers studying in a science-related major were noted to have a higher competence than others. Finally, researchers suggested that how frequently the internet is used had a positive impact on the digital literacy level of participants.

Based on these overviews, there may be various factors affecting digital literacy and related competencies, such as gender, socio-economic background, availability of ICT courses, university department, and frequency of internet use. While pre-service teachers' attitudes and perceptions towards technology use are positive, there is a lack of correlation between perceptions and actual proficiency in technology usage. One of the factors increasing digital literacy and proficiency in technology use is ICT courses offered for pre-service teachers, as it was found that digital literacy levels increased each year after attending ICT-related courses.

2.6 Learner Autonomy

There have been several attempts at defining learner autonomy. The earliest and one of the most influential is Holec's (1981) definition as "the ability to take charge of one's learning." Moreover, subsequent definitions in the literature replaced the phrase 'take charge of' with 'willingness' (Dam, 1995), 'capacity' (Little, 1991), or

‘take responsibility for’ (Benson, 2013). Before delving into what learner autonomy is, some scholars start by stating what learner autonomy is *not* (Little, 1991).

First, Esch (1998) states that learner autonomy is not self-instruction with a teacher, nor is it a new methodology. Furthermore, it is not something teachers do for learners and it is not a single behavior and state that can be achieved by learners. In order to better understand the concept of learner autonomy, Sinclair (2000) suggests 13 aspects of learner autonomy that appear to have been accepted and recognized as shown in Table 2:

Table 2

Defining Learner Autonomy (Sinclair, 2000)

Aspects of Learner Autonomy
Autonomy is a construct of capacity
Autonomy involves a willingness on the part of the learner to take responsibility for their own learning
The capacity and willingness of learners to take such responsibility is not necessarily innate
Complete autonomy is an idealistic goal
There are degrees of autonomy
The degrees of autonomy are unstable and variable
Autonomy is not simply a matter of placing learners in situations where they have to be independent
Developing autonomy requires a conscious awareness of the learning process – i.e. conscious reflection and decision-making
Promoting autonomy is not simply a matter of teaching strategies
Autonomy can take place both inside and outside the classroom
Autonomy has a social as well as an individual dimension
The promotion of autonomy has a political as well as psychological dimension
Autonomy is interpreted differently by different cultures

Furthermore, Little (2009) argued that three challenges hinder implementing learner autonomy. These are teacher doubt, lack of teacher expertise, and ‘tyranny of textbook/syllabus/exam’ – as in the fear of losing track of pacing and/or the need to prepare the students for exams. Reducing evaluative pressure and increasing the chance for students to have a voice and choice by teachers can support learner autonomy (Al-Asmari, 2013).

While the above studies describe learner autonomy, the characteristics of autonomous learners are essential to understand and are described in the literature (Chan, 2001; Oxford, 2003). Chan's (2001) study suggested that the following characteristics identified an autonomous learner: goal-oriented, willing to ask questions, well organized, active, initiative, enthusiastic about learning, flexible, hardworking, highly motivated, and making use of every opportunity to improve their learning. Another description of an autonomous learner by Oxford (2003) includes characteristics such as high motivation, self-efficacy, sense of effectiveness, desire to seek meaning, positive attitude, the need to achieve, and a combination of internal and external motivation.

Furthermore, teachers are the key factor in this as Little (2000) stated that if teachers themselves do not know what it is to be an autonomous learner, they can't be expected to facilitate the growth of autonomy in their learners. Teachers should be able to exploit their professional skills autonomously (Little, 1995). Smith (2001) further explains the link between teachers and learner autonomy by emphasizing the connection between teacher reflection and improving learner autonomy. The findings revealed that teachers need to reflect on their role in the classroom to facilitate students' reflection on their own learning and to engage them in autonomous activities. As a result of this, the study suggested that students and teachers learning together could lead to them becoming stronger in terms of pedagogy for autonomy together with reflective teaching.

Considering the connection between learner and teacher autonomy, Viera (2007) put forward an 'autonomy triangle' and explained that the expression 'learning how to learn' under learner autonomy is meant to include everything that students might learn to develop their autonomy, as the terms teachers and learners are broad in scope (see Figure 1 below).

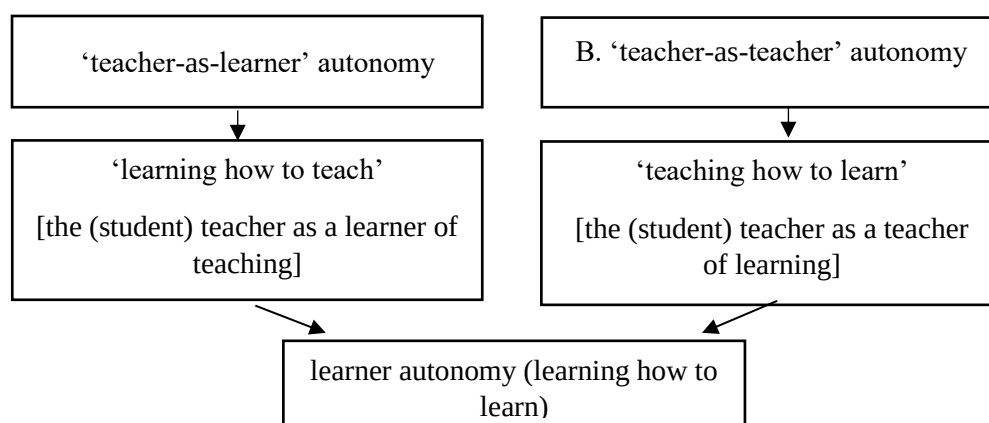


Figure 1. The autonomy triangle. (Viera, 2007)

Based on these overviews, teachers are key factors in developing learner autonomy, and that in order to improve their learners' autonomy, first, teachers need to be autonomous learners themselves. There also seems to be a positive link between teacher and learner autonomy per the findings in the literature. Furthermore, teachers are responsible for engaging students in activities that promote autonomy. This puts importance on improving pre-service teachers' autonomy, which will be reviewed in the next section.

2.6.1 Pre-service teachers and learner autonomy. Learner autonomy has received attention in pre-service teacher education as well. Various studies investigated learner autonomy in pre-service teachers, in relation to different variables (Alkan & Arslan, 2019), perceptions towards learner autonomy (Putra & Iswara, 2019), and how to foster learner autonomy (Öztürk, 2019).

To begin with, Putra and Iswara (2019) surveyed 25 pre-service teachers on their perception of learner autonomy. The participants reported that it was important to learn to pass exams and the failure of students would be the teacher's fault. The researchers state that the participants' view on autonomy lingered on a teacher-centered model and as a result, Putra and Iswara concluded that they had low levels of autonomy due to their lack of understanding of what learner autonomy is.

In a similar study, Cubukcu (2016) examined the correlation between teacher trainers' and pre-service teachers' perceptions of learner autonomy. The results found that there is a correlation between their perceptions, yet, pre-service teachers and their teachers had different perspectives on autonomy. In all items, pre-service teachers preferred the teacher to have more responsibility, such as in selecting topics, tasks, and

activities, where in-service teachers favored the idea to give learners more responsibilities.

Furthermore, in a mixed-method study by Öztürk (2019), 25 pre-service EFL teachers' learner autonomy levels were investigated. After taking a course specifically designed to improve learner autonomy, pre-service teachers' autonomy levels were higher ($m=44,32$) compared to the pre-test ($m=39,52$) before the course was taken. It was also reported that participants expressed a positive perspective change towards the notion of autonomous learning.

Furthermore, studies on fostering learner autonomy and investigating perceptions on autonomy aside, different variables in relation to autonomy were carried out by distinguished scholars as well (Alkan & Arslan, 2019; Lowe, 2009; Ng et al., 2011). Alkan and Arslan (2019) examined the relationship between autonomy, motivation, and self-efficacy in pre-service teachers. 776 pre-service teachers participated in the study. The results showed that academic self-efficacy and motivation were predictors of autonomy and that GPAs and autonomy levels were significantly correlated.

Lowe (2009) investigated the relationship between learner autonomy and academic performance in 135 adult learners at the university level. It was reported that there was a significant relationship between academic achievement and learner autonomy level. Similarly, in a quantitative study conducted by Tilfarlioglu and Ciftci (2011), 250 participants studying at the preparatory level were investigated in terms of academic success, learner autonomy, and self-efficacy. The reported results showed that there was a positive correlation between learner autonomy and students' academic success.

To summarize, the studies reviewed in this section report that pre-service teachers have low autonomy and prefer their teachers to have more responsibility. Furthermore, it was found that motivation and self-efficacy for predictors for autonomy and that learners' autonomy increased after taking courses specifically designed to improve autonomy. While autonomy is an area where there have been many studies, autonomy studies in regards to pre-service teachers, especially EFL pre-service teachers, are limited to the best of the author's knowledge.

2.7 Relationship between Autonomy and Digital Literacy

There have been studies that link learner autonomy with factors that are related to digital literacy, such as blended learning, online education, etc. (Eneau and Develotte, 2012; Nikolayeva et al., 2019; Ting, 2015; Yen & Liu, 2009).

In one of the studies, Ting (2015) employed negotiated learning and students' digital literacy (via ICT tools) to promote learner autonomy. The study concluded that students' digital literacy played an important part in overcoming difficulties and being autonomous. The study further argued that students' digital literacy should be related to their autonomous learning and that there is more value to digital literacy than to operate ICT tools for education.

Online education is another concept that has been investigated together with learner autonomy. Specifically, Eneau and Develotte (2012) examined 27 French language teachers enrolled in a related M.A. program in terms of online education and autonomy. The results showed that online education played a positive role in improving learner autonomy. It was also mentioned that developing one's autonomy required that learners understand the level of autonomy required for online learning.

Nikolayeva et al. (2019) investigated the development of pre-service EFL teachers' skills and autonomy via blended learning. The results indicated that blended learning improved EFL teachers' language skills, professional skills, and learner autonomy. Participants' perceptions towards blended learning were reported also as positive.

In brief, recent studies in relevant literature have suggested that there is a positive correlation between learner autonomy and other factors such as blended learning, online education, and digital literacy. Having high digital literacy levels are connected with overcoming problems and being more autonomous while using ICT tools for education and that autonomy is improved through blended learning and online education.

2.8 Conclusion

While it can be inferred that autonomy and digital literacy are investigated in different settings and contexts, there is limited literature in the context of pre-service EFL teachers. To the best of the author's knowledge, there are not any studies

investigating digital literacy and learner autonomy in pre-service EFL teachers in a Turkish online education setting. In light of this information, this thesis aims to contribute to the field by shedding light on the relationship between EFL pre-service teachers' perceptions of digital literacy and learner autonomy levels in online education



Chapter 3

Methodology

In this chapter, the methodology of the study is described. Information on research design, setting, participants, procedures, data collection tools, research questions, and limitations are presented in the following sections. The following research questions can be formulated in this study:

- I.* Does online education have any impact on the digital literacy levels of ELT freshman students?
- II.* Does online education have any impact on the autonomy levels of ELT freshman students?
- III.* Is there any significant relationship between the digital literacy level and autonomy level of the participants?
- IV.* What are the perceptions of ELT freshman students on digital literacy?
- V.* What are the perceptions of ELT freshman students on learner autonomy?

3.1 Research Design

A mixed-method approach was adopted in this study by employing qualitative and quantitative methods to investigate the relationship between digital literacy perceptions and learner autonomy beliefs of freshman ELT students. Creswell (2009) stated that a mixed-method design can be beneficial when neither qualitative nor quantitative approaches in themselves are sufficient to examine the research problem or when the benefits of both approaches help the researcher have a better understanding. Therefore, both qualitative and quantitative data were included in this study as employing a combination of both forms to verify or integrate the results of research by triangulation can be used by the researcher, (Rossman & Wilson, 1991). Moreover, Cresswell (2012) argued that there are four types of mixed-method analysis approaches, namely convergent, explanatory, embedded, and exploratory. In explanatory analysis, quantitative data is compiled and analyzed followed by qualitative data. In an exploratory analysis, qualitative data is used to support and justify quantitative data, which is collected beforehand. On the other hand, convergent

analysis deals with both qualitative and quantitative data at the same time without prioritizing either data set. Finally, in embedded design, both data types are collected simultaneously but either quantitative or qualitative data is prioritized.

As this study aimed to investigate the relationship between undergraduate ELT students' perceptions of digital literacy and autonomy levels, an embedded design was incorporated since a small number of participants of the whole sample was used to collect qualitative data to gain more insight and better understand the results of the quantitative data. The following figure displays a visual representation of data collection, analysis, and interpretation. Figure 2 shows a visual representation of the research design.

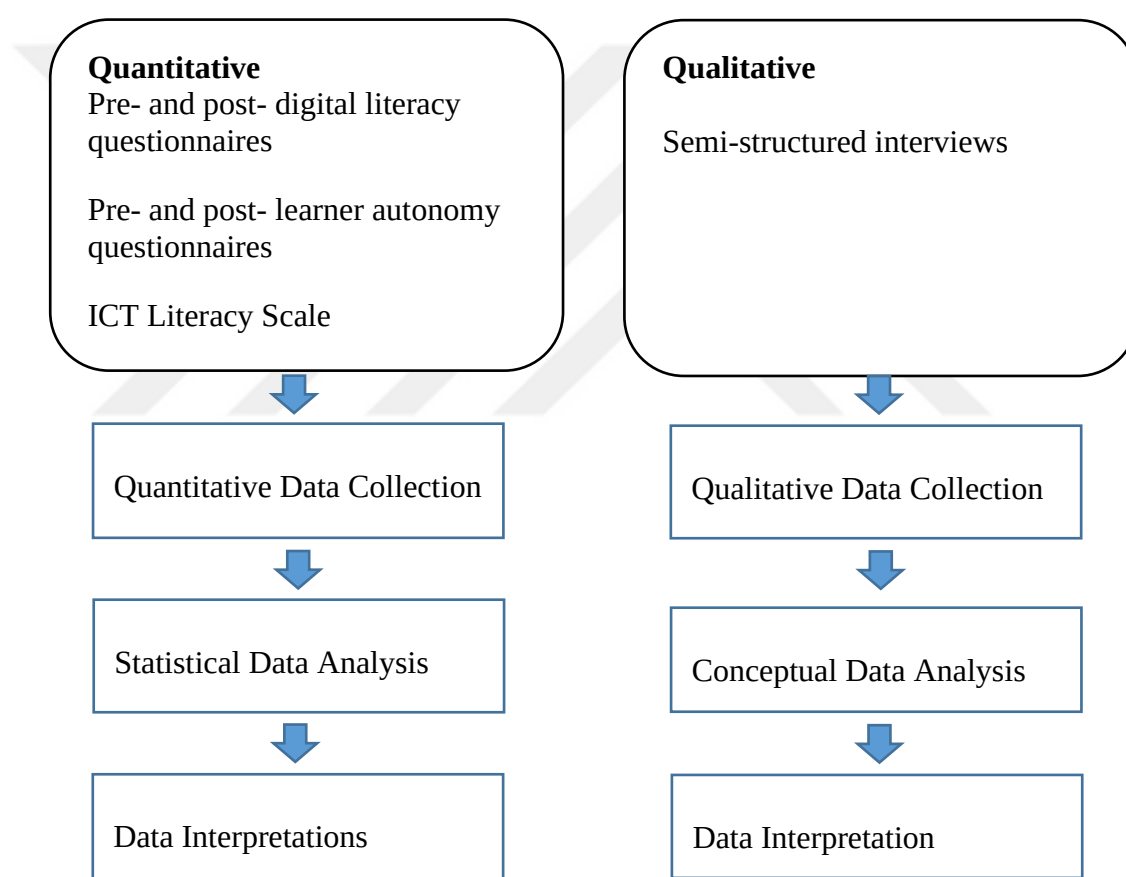


Figure 2. A visual representation of the research design.

3.2 Setting

The study was conducted at the faculty of education of a foundation university in Turkey. The university was founded in 2014 and English Language Teaching (ELT)

department was founded and accepted its first students at the beginning of the 2018-2019 academic year. In this university, newly enrolled ELT students are required to take a proficiency exam to determine if they are ready to start as a freshman in their departments. The passing score of this proficiency exam is 60 and, the ones who fail must take a year of preparatory classes, together with students from other departments. As a result, first-year students consist of both newly enrolled ones that passed the proficiency and ones that completed the preparatory program successfully.

Before the Covid-19 pandemic, most courses offered for ELT students were face-to-face, except Higher Education Council (YÖK) mandated courses (Turkish Language – Atatürk's Principles and Reforms). However, courses were changed to online only during the pandemic. First-year students are enrolled in courses that aim to improve their academic English and to introduce them to their department courses, such as Writing Skills, Reading Skills, Listening Skills, Oral Communication, Introduction to Education, Educational Sociology, and Information Technologies. Courses are offered through the institutions learning management system called Birdeha (<https://bem.biruni.edu.tr/>), which is similar to Moodle in terms of design and functionality. All assignments, projects, and exams are conducted through this portal as well as online courses, which can be attended in real-time or through watching past recordings. It is also the primary medium in which students and instructors communicate when necessary.

3.3 Participants

The participants of the study were freshman ELT students (n=49), selected as participants via convenient sampling. The rationale behind the decision to include only freshman students is the fact that, for most of them, it is their first experience of online education in university. Another reason for the choice of sampling is that freshman students did not take any ICT course at the university level at the time of the study. However, the students enrolled in previous years took one or two ICT-related courses and thus, were not included in the sampling process so as not to skew potential results. In addition, the participants did not have any preparatory classes so it was their first year at the university. The participants were between the ages of 18 and 30, with most of them being 18 or 19. There were 12 males and 37 females in the sample and all of them took the courses together in a single group, from the same instructors.

Specifically, it was the participants' first time using the institution's learning platform as well as their first time taking higher education level courses in an online setting. This platform was their primary way of following assignments and watching online lessons. Interaction between students and teachers happened exclusively via online means such as Birdeha, WhatsApp, and meetings on Zoom.

Previous to the data collection process, an ICT-scale survey (Appendix A) was administered in order to get the demographic information of the participants and information regarding computer and internet use. The participants' names and contact information were not gathered to ensure confidentiality. According to the survey, 46 of the participants have a personal computer or laptop in their homes or dormitories. The ones that do not have a pc or laptop stated that they use computers in the library (n=3) or use their friends' computer. All participants also stated that they possess a smartphone and have internet access. In terms of computer use frequency, 29 participants use computers every day and only 7 participants use them twice a week or less. While smartphone and computer possession is high amongst the participants, 41 participants access the internet regularly.

Moreover, the scale also included sections for different computer-based activities, some related to school-related activities (gaming, following social media, etc.) and others related to extracurricular activities (doing homework, preparing documents, studying language, creating presentations, etc.). 32 participants answered that they use computers for doing homework weekly and 11 participants that they use it almost daily. Furthermore, only 10 participants stated that they had experience with a learning management system (LMS) beforehand and 40 participants had never used an LMS software before. The results of this survey can be interpreted as the participants having access to digital services and regularly using them, yet, not having enough experience with utilizing technology for academic purposes.

3.4 Procedures

In this section, data collection (questionnaires, semi-structured interviews and pilot study) and data analysis procedures conducted during this study are described in detail.

3.4.1 Data collection instruments. As this study followed a mixed-method design, both quantitative and qualitative data collection tools were employed including a Likert-scale Learner Autonomy Readiness Questionnaire, a Digital Literacy Scale, and semi-structured interviews.

3.4.1.1 Learner autonomy readiness questionnaire (LARQ). Dörnyei (2018) suggests that the popularity of questionnaires is due to the easiness to construct them and that they can gather a large amount of information in a versatile and quick way, and so can be adapted to different situations and contexts. The aim of this questionnaire (Appendix B) used in the study was to collect data on students' readiness for autonomous learning. The instrument was developed by (Nasöz, 2015) and the questionnaire was based on four issues: (1) learners' views on their own and teacher's roles in language learning; (2) learners' decision-making abilities; (3) motivation and (4) metacognitive strategy use. The study further clarifies that the first set of questions explored students' views on their own and teachers' responsibility, the second set investigated students' perceptions of their decision-making skills, the third set measured their motivation level and that the last set investigated their metacognitive strategy use. The questionnaire included 31 items on a 5-point Likert scale that ranged from 1 representing *strongly disagree* and 5 representing *strongly agree*.

For the purposes of this study, the questionnaire was conducted at the beginning of the study and after 10 weeks of online courses to find out the effects of online education on learner autonomy of the participants and also, to find out any potential relationship between their perceptions of digital literacy and learner autonomy.

3.4.1.2 Digital literacy scale (DLS). The digital literacy questionnaire (Appendix C) was employed to investigate the change in characteristics of participants' digital literacy throughout the semester. The questionnaire was designed developed by Ng (2012) to gain insight into participants' perspectives on learning with ICT and to identify dimensions of participants' digital literacy. The questionnaire consisted of 17 items on a 5-point Likert scale ranging from 1 representing strongly disagree and 5 representing strongly agree. 4 dimensions were examined in the questionnaire. The first 7 items investigated the participants' views of using ICT for learners, the next 6 items focused on technical elements of digital literacy, the next 2

items examined the cognitive aspect of digital literacy, and finally, the last section explored the social-emotional component of digital literacy.

In this study, the digital literacy questionnaire was conducted as pre- and post-questionnaires to investigate a change in perceptions of digital literacy throughout the 10 weeks of online courses and to explore the potential relationship between learner autonomy and digital literacy in participants.

3.4.1.3 Pilot study. A pilot study was conducted in order to ensure the internal reliability and validity of the data collection instruments. The sample for the pilot study consisted of 25 freshman students studying English language teaching at a foundation university in Istanbul, Turkey. The ages of the participants ranged from 18 to 22. The reason for conducting the pilot on this sample was to choose participants of similar demographics as the sample of this study.

Both questionnaires were given at the same time to the sample and the results were analysed using SPSS 25. For the Digital Literacy questionnaire, Cronbach Alpha was measured as .856 and the Cronbach Alpha for learner autonomy readiness questionnaire was measured as .778. The Cronbach Alpha values for both questionnaires were calculated by the instrument developers and were reported to be .869 for Digital Literacy Scale (Ng, 2012) and .827 for Learner Autonomy Readiness Questionnaire (Nasöz, 2015). It can be said that both instruments are reliable enough in statistical terms according to the analysis.

3.4.1.4 Semi-structured interviews. To support the quantitative data from pre- and post-test questionnaires, semi-structured interviews were conducted to gather qualitative data. Interview questions (Appendix D) were developed by the researcher based on the dimensions explored in each questionnaire. The interviews consisted of 10 pre-determined questions, 4 of them concerning digital literacy based on the dimensions in the questionnaire (Attitudes towards ICT / Technical dimension of DL / Cognitive Dimension of DL/ Social-emotional dimension of DL), and 6 of them concerning learner autonomy, related to the dimensions in LARQ (decision-making abilities/students' views on their own and teacher's roles/ motivation / metacognitive strategy use). After designing a draft of the questions, the draft was sent to an expert for review. Based on the feedback, the wording and structures of the questions were altered.

The semi-structured interviews were conducted with 8 participants together with the questionnaires at the beginning and the end of the data collection procedure. The interview participants were selected randomly to gain more insight into students' opinions and views on learner autonomy and digital literacy. The oral interviews were conducted online, and the sessions were recorded and transcribed so as not to miss any important information during the analysis. All participants were informed that the recordings would be kept private and oral consent was taken during the interview.

3.4.1.5 Pilot study. A pilot study was conducted in order to ensure the internal reliability and validity of the data collection instruments. The sample for the pilot study consisted of 25 freshman students studying English language teaching at a foundation university in Istanbul, Turkey. The ages of the participants ranged from 18 to 22. The reason for conducting the pilot on this sample was to choose participants of similar demographics as the sample of this study.

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3.4.2 Data analysis procedure. Qualitative and quantitative data were collected in this research study. The quantitative data collected through pre- and post-questionnaires were compiled with Google Forms and analyzed using SPSS 25. The qualitative data were collected in semi-structured interviews to support quantitative data. Thematic analysis was applied to interpret the data compiled from semi-structured interviews. Niland et al. (2014) emphasize the flexibility of thematic analysis by highlighting its effectiveness in analyzing many different data collection methods, such as oral interviews and written surveys.

3.4.2.1 Analysis of digital literacy scale (DLS). The pre- and post- digital literacy questionnaires were applied to determine changes in students' digital literacy levels throughout the study and to examine the potential relationship between digital literacy, learner autonomy, and online education. The questionnaires were administered through an online platform called Google Forms, and the compiled data

were imported to SPSS 25 for analysis. First, descriptive analysis was conducted on the data set followed by a normality test to assess the data set and to choose which t-test to conduct. Next, a paired-sample t-test was conducted to compare the pre- and post- test to see if there were any significant changes in students' digital literacy level throughout the study.

3.4.2.1.1 Test of normality for DLS. Since the sample size was smaller than 50, the Shapiro-Wilk test was conducted for testing normality assumptions, as it is found to be more suitable for the sample size (Liang, et al., 2019). The questionnaire was analyzed for the test of normality (See Table 3).

Table 3

Test of Normality for DLS

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
DLS	.077	49	.200*	.982	49	.658

*p<.05

In the test of normality, Shapiro-Wilk's significant values indicate that the data is normally distributed as the significance value is over .05.

3.4.2.2 Analysis of learner autonomy readiness questionnaire (LARQ). The pre- and post-learner autonomy questionnaires were administered to investigate changes in students' autonomy levels, and to examine the potential relationship between autonomy, digital literacy, and online education. The questionnaires were distributed via Google Forms, and the compiled data were imported to SPSS 25. Shapiro-Wilk test was conducted to test for normality, followed by descriptive analysis, which was used to analyse the results. Next, a paired-sample t-test was conducted to compare pre- and post-test results for any significant changes. The results were examined and compared with other data compiled throughout the study.

3.4.2.4 Test of normality for LARQ. As the sample size was lower than 50, the Shapiro-Wilk test was employed for normality assumptions. Four sub-categories of LARQ (Students' views, Decision-making, Motivation, and Metacognitive) were examined (See Table 4).

Table 4

Test of Normality for LARQ

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Students Views	.128	49	.044	.977	49	.437
Decision-making	.111	49	.176	.979	49	.539
Motivation	.091	49	.200	.987	49	.850
Metacognitive	.097	49	.200	.978	49	.492

*p<.05

As shown in the table above, significance value for students' views ($p = .437$), decision-making ($p = .539$), motivation ($p = .850$) and metacognitive ($p = .492$) were above .05, which indicates a normal distribution on data. As both questionnaires' data appear to be normal as per tests of normality, a paired-sample t-test, which is a parametric test, was conducted to further analyze the dataset.

3.4.2.5 Analysis of semi-structured interviews. In order to increase the reliability and validity of quantitative data, semi-structured interviews were conducted to gather qualitative data. Semi-structured interviews were conducted orally through online meetings and the sessions were recorded and transcribed by the researcher.

To interpret the transcriptions, the data were analyzed by hand-coding by the researcher, as it gives more control over the work when the qualitative data is on small scale (Saldana, 2021). Recurring words, phrases, and ideas were determined and categorized as codes. These codes were categorized into conceptual themes. These themes were classified under conceptual headings, and the answers of participants were discussed under each heading.

After the analysis, the researcher asked an expert to review the data interpretations and analysis of qualitative data so as not to miss any information present in the data set, and to determine any overemphasized or underemphasized codes and themes. As Table 5 shows, in the analysis of semi-structured student interviews, 60 codes and 21 themes were found.

Table 5

Interrater Reliability of the Interview Data

	Interviews
No. of codes included by both raters	32
No. of codes excluded by both raters	14
No. of codes included only by the first rater	9
No. of codes included only by the second-rater	5
Total number of codes	60
Total number of themes	21
Total number of categories	8
Cohen's Kappa	.698

These themes were classified into 8 categories. Cohen's Kappa analysis was used for inter-rater reliability analysis as it is accepted to have the highest standard for measuring reliability (Fiese & Spagnola, 2005). Cohen's Kappa was found as .698, which was in the acceptable range (Bakeman and Gottman, 1986).

In the following table, the research questions and relevant data collection tools are displayed followed by the types of analyses.

Table 6

Research Questions, Data collection Methods, and Data Analysis Methods

Research Questions	Data Instruments	Collection	Data Analysis
Does online education have any impact on the digital literacy levels of freshman ELT students?	DLS (Ng, 2012)		Quantitative analysis of the pre-and-post questionnaires

Table 6 (cont.)

Research Questions	Data Collection Instruments	Data Analysis
Does online education have any impact on the autonomy levels of freshman ELT students?	LARQ (Nasöz, 2015)	Quantitative analysis of the pre- and post-questionnaires
Is there any significant relationship between the digital literacy level and autonomy level of the participants?	DLS, LARQ	Quantitative analysis of the pre- and post-questionnaires
What are the perceptions of freshman ELT students on digital literacy?	Semi-structured interviews	Content analysis of the interview transcriptions
What are the perceptions of freshman ELT students on learner autonomy?	Semi-structured interviews	Content of the interview transcriptions

3.5 Limitations

While the current study employed both quantitative and qualitative data for better insight and analysis on the subject matter, there were some limitations to consider. First, the sample size for quantitative data collection was limited to 49 participants due to the limited number of freshman ELT learners at the university. The reason to exclude the sophomore, junior and senior students was that there is an ICT course offered at the sophomore year, and that was considered to be an influential factor on their digital literacy levels and perceptions. Plus, the freshman students had not taken any online courses prior to the study, while the other students had for 6 months before the study began. Aside from the modest sample size, interview

participants were selected randomly at the beginning due to not having any prior data about their autonomy readiness and digital literacy levels. The random interview sample size might have not been representative of the whole sample. Therefore, the results of this study should be considered as suggestive rather than descriptive



Chapter 4

Results

4.1 Overview

This chapter reports the findings of both qualitative and quantitative data analysis of this study. The quantitative data results were presented through descriptive statistics, paired-sample t-test, and Pearson's correlation analysis while the qualitative data analysis was presented using thematic analysis of semi-structured interviews with the participants.

The purpose of this study was to investigate the relationship between students' perceptions of digital literacy and autonomy levels in relation to online education. The quantitative data were used to examine the digital literacy and autonomy perceptions of the students and semi-structured interview data were used to gain deeper insight into the subject matter. Therefore, the questions in the interviews were compiled according to the sub-categories of the questionnaires used to examine digital literacy and learner autonomy. The quantitative data were analysed with Statistical Package for Social Sciences (SPSS) version 25 while the qualitative data were analysed by the researcher using thematic analysis.

The questions formulated to investigate the mentioned purposes of the present study are:

- I.* Does online education have any impact on the digital literacy levels of freshman ELT students?
- II.* Does online education have any impact on the autonomy levels of freshman ELT students
- III.* Is there any significant relationship between the digital literacy level and autonomy level of the participants?
- IV.* What are the perceptions of freshman ELT students on digital literacy?
- V.* What are the perceptions of freshman ELT students on learner autonomy

4.2 The Impact of Online Education on Digital Literacy Levels of Freshman ELT Students

The first research question of the study aimed to investigate the impact of online education on the digital literacy levels of freshman ELT students. To investigate this question, a pre- and post- digital literacy questionnaire was administered to the participants and the results were analysed via descriptive statistics and paired sample t-test under the following tables.

4.2.1 Findings about students' attitudes towards ICT for learning. The first category of the digital literacy questionnaire was related to students' attitudes towards ICT for learning. The obtained results are presented in the Table below:

Table 7

Descriptive Statistics of Pre and Post-test Attitudes towards ICT for Learning Dimension

	Pre-test		Post-test	
	M	SD	M	SD
I like using ICT (information and communications technology) for learning.	3.29	1.06	3.73	1.16
I learn better with ICT.	2.37	1.30	3.20	.97
ICT makes learning more interesting.	2.57	1.25	3.31	1.12
I am more motivated to learn with ICT.	2.22	1.17	2.90	.96
ICT enables me to be a self-directed and independent learner	2.92	1.23	3.35	.85
There is a lot of potential in the use of mobile technologies (e.g. mobile phones, smartphones, etc.) for learning.	3.73	.99	4.06	.68
Teachers/lecturers should use more ICT in their teaching of my classes	2.82	1.11	3.63	.75

As shown in Table 7, the highest and lowest scores given by the students were examined. For this sub-category, the students gave the highest score to *there is a lot of potential in the use of mobile technologies for learning*. On the other hand, the second item *I am more motivated to learn with ICT* got the lowest score from the students, followed by the item *I learn better with ICT*. It can be derived that there was a negative attitude towards ICT in general.

The results of items 1-7 in the pre-test questionnaire revealed that %45 of the students (n=22) agreed and %6 of the students (n=3) strongly agreed that they like using ICT for learning while 8% of the students (n=4) disagreed and 10% of the students (n=5) strongly disagreed to the notion. 30% of them (n=15) stayed neutral. In the post-test results, we see a more positive outcome, where %32 of the students (n=16) strongly agreed and %28 of the students (n=14) agreed that they like using ICT for learning.

Despite a general positive attitude towards the first item in both pre and post-test questionnaires, %38 of the students (n=19) strongly disagreed, and %12 of the students (n=6) disagreed with the statement *I learn better with ICT* in the pre-test. 28% of the students (n=14) answered neutrally while %14 of them (n=7) agreed and %6 of them (n=3) strongly agreed. In the post-test, the number of negative answers decreased as only %12 of the students (n=6) disagreed and %6 of the students (n=3) strongly disagreed with the statement.

On the question of whether ICT makes learning more interesting, in the pre-test, only %18 of the students (n=9) agreed, and %6 of them (n=3) strongly agreed with the rest remaining neutral or disagreeing. This figure significantly increased in the post-test where %26 of the students agreed and %16 of the students strongly agreed. Although a significant number of students answered neutral (n=17), only %22 of the students (n=11) held a negative attitude in the post-test. Furthermore, more than half of the students (n=28) did not find ICT motivating in the pre-test and 26% of the students (n=13) were neutral. This figure did not change much in the post-questionnaire as 22 of the students stated that they did not find ICT motivating.

Moreover, %43 of the students (n=21) accepted the notion that ICT makes them an independent and self-directed learner in the pre-test while %47 of the students (n=23) either disagreed or strongly disagreed. In the post-questionnaire, %47 of the students (n=23) agreed to this statement but 41% of the students (n=20) stayed neutral.

While the number of negative answers decreased, most of them held a neutral stance at the end.

Finally, most of the students (n=33) agreed that there is a lot of potential in the use of mobile technologies for learning in the pre-test and the post-test (n=39). While they were reluctant on the statement that teachers should use ICT more in class, with %40 of the students (n=21) disagreeing, most of the class (n=29) answered positively in the post-questionnaire.

4.2.2 Findings about the technical dimension of digital literacy. The second category of the digital literacy questionnaire was related to the technical dimension. The obtained results are presented in the table below:

Table 8

Descriptive Statistics of Pre and Post-test Technical Dimension

	Pre-test		Post-test	
	M	SD	M	SD
I know how to solve my own technical problems.	2.82	.99	3.39	.97
I can learn new technologies easily.	3.47	1.08	4.06	.74
I keep up with important new technologies.	3.47	1.06	3.71	.91
I know about a lot of different technologies.	3.12	.90	3.16	.94
I have the technical skills I need to use ICT for learning and to produce language (e.g. presentations, digital stories, wikis, blogs) that demonstrate my understanding of what I have learned	3.20	1.02	3.73	.70
I have good ICT skills	2.84	1.04	3.53	.86

Table 8 shows that new technologies are followed by the learners and easily learned as the relevant items (item 9-10) had the highest mean scores on the pre-test questionnaire on item 9 (M=3,47, SD=1,063) and item 10 (M=3,47, SD=0.904). Frequency analysis revealed that %28 of the students (n=14) agreed that they had good ICT skills, which increased to %53 (n=26) in the post questionnaire.

In terms of perceptions on their technical skills, %37 of the students (n=18) were neutral, and %20 of the students (n=10) disagreed that they possessed technical skills to use ICT for learning. However, in the post-questionnaire, more than half of the students (n=31) had a positive perception of their technical skills while only 1 student disagreed.

4.2.3 Findings about the cognitive dimension of digital literacy. The third category of the digital literacy questionnaire was related to the cognitive dimension. The obtained results are presented in the Table below:

Table 9

Descriptive Statistics of Pre and Post-test Cognitive Dimension

	Pre-test		Post-test	
	M	SD	M	SD
. I am confident with my search and evaluation skills in regard to obtaining information from the Web	3.71	.86	3.76	.56
. I am familiar with issues related to web-based activities e.g. cyber safety, search issues, plagiarism	3.47	.98	3.51	1.00

According to Table 9, students were confident with their search and evaluated skills in regards to obtaining information from the web as the relevant item (item 14) had the highest mean scores both in pre-questionnaire (M=3,71, SD=0,866) and post questionnaire (M=3,76, SD=0.56). Furthermore, frequency analysis shows that students thought they were familiar with issues related to web-based activities such as plagiarism and cyber safety as %55 of the students (n=27) answered positively in the pre-test questionnaire while %51 of the students (n=25) answered positively in the post-questionnaire.

4.2.4 Findings about the social-emotional dimension of digital literacy. The fourth category of the digital literacy questionnaire was related to the social-emotional dimension (See Table 10).

Table 10

Descriptive Statistics of Pre and Post-test Social-emotional Dimension

	Pre-test		Post-test	
	M	SD	M	SD
ICT enables me to collaborate better with my peers on coursework and other learning activities	2.82	.95	3.37	.83
I frequently obtain help with my university work from my friends over the Internet e.g. through WhatsApp, Instagram, etc.	4.16	.71	3.63	.97

Table 10 displays that ICT enabled the learner to collaborate better with their peers as can be seen from the difference in mean scores in the pre-questionnaire (M=2.82, SD=0.95) and post-questionnaire (M=3.37, SD=0.834) in the relevant item (item 16). On the other hand, %90 of the students (n=44) answered positively to the statement that they obtain help with their university work from their friends over the internet in the pre-questionnaire, while this figure dropped significantly to %57 (n=28) in the post-questionnaire.

4.2.5 The effects of online education on digital literacy. In order to analyze the effects of online education on digital literacy, a paired-sample t-test was conducted to find out whether there were any significant differences between pre and post-test learner autonomy readiness questionnaire results (see Table 10).

Table 11

Paired-sample t-test Results for Digital Literacy Scale

	Paired-Samples t-test						
	t	df	Sig. (2-tailed)	Mean Difference	Std. Deviation	95% Confidence Interval of the Difference	
						Lower	Upper
PreDLS	32	49	.000*	3.11	.67	2.92	3.31
PostDLS	48	49	.000*	3.53	.50	3.38	3.67

* p < .05

As can be seen from the results of the t-test reported above, a pre-test ($M= 3.11$, $SD= .67$) and post-test ($M=3.53$, $SD=.50$) scores indicated that there was a significant positive increase between students' digital literacy after ten weeks of online education compared to the beginning of the semester $t(48) = 3.3, p = .002$.

4.3 Learner Autonomy Readiness Questionnaire Results

The second research question of the study aimed to investigate the impact of online education on learner autonomy readiness of freshman ELT students. To investigate this question, a pre- and post-learner autonomy readiness questionnaire was administered to the participants and the results were analyzed via descriptive statistics and paired samples t-test under the following tables.

4.3.1 Findings about students' views on their own roles and teacher's roles.

The first category of the learner autonomy readiness questionnaire was related to students' views on their own roles and teacher's roles. The obtained results are presented in the Table below:

Table 12

Descriptive Analysis of Pre and Post-test Students' Views on their own Roles and Teacher's Roles Dimension

	Pre-test		Post-test	
	M	SD	M	SD
6. I think it is the teacher's responsibility to decide what I should learn.	2.20	1.11	3.20	1.13
20. I need the teacher to tell me how I am progressing	2.06	.87	4.04	.86
22. It is difficult for me to know how long to spend on each activity.	2.08	.99	3.30	1.06
26. The teacher should identify my learning weaknesses in English.	2.16	1.19	4.00	.70
31. The teacher should tell me how long I should spend on each activity	2.12	1.16	3.20	.86

As descriptive analysis displayed, students' views on their own roles and teachers' roles have changed positively in post-test results. The item about whether the students need the teacher to tell them how they are progressing (item 20) had the highest difference in the pre-test ($M=2.06$, $SD=0.87$) and post-test ($M=4.04$, $SD=0.86$) scores.

Furthermore, 35% of the students ($n=17$) strongly agreed, and 31% of the students ($n=15$) agreed that it was the teacher's responsibility to decide what they should learn but only 33% of the students ($n=16$) agreed with this statement in the post-test. On a similar note, 16% of the students ($n=8$) thought they should decide what to learn out of the class in the pre-test while this number increased to 73% ($n=36$) in the post-test.

In addition, 72% of the students ($n=35$) stated that it is difficult for them to know how much to spend on an activity. In the post-test, this number dropped to 27% of the students ($n=13$) while 39% of the students ($n=19$) did not report having any difficulty, and 35% of the students ($n=17$) were neutral. Similar results were seen on the item *the teacher should tell me how long I should spend on each activity*, as 74% of the students stated that they need the teacher to tell them in the pre-test and only 22% of the students ($n=11$) stated the same in the post-test.

Finally, the students' opinions on whether the teacher should identify their learning weaknesses in English differed between pre and post-test. At the beginning of the semester, 39% of the students ($n=19$) strongly agreed, and 27% of the students ($n=13$) agreed on the statement while only 4% of the students ($n=2$) agreed on it in the post-test.

4.3.2 Findings about students' decision-making process. The second category of the learner autonomy readiness questionnaire was related to students' decision-making process (See table 13).

Table 13

Descriptive Statistics of Pre and Post-test Decision-making Dimension

	Pre-test		Post-test	
	M	SD	M	SD
1. I should evaluate my learning in English.	3.00	1.22	4.18	.565
3. I have clear goals for improving my English skills.	2.53	.98	4.10	.823
7. I have a clear idea of what I need English for.	3.12	1.26	4.29	.577
9. I am able to choose learning materials for myself.	3.41	1.15	3.98	.750
11. I plan my schedule so I will have enough time to study English.	2.51	1.00	3.45	.937
16. I look for people I can talk to in English.	2.53	1.15	4.16	.850
17. I have difficulty deciding what to study outside class	2.53	1.22	3.20	1.11

In terms of students' decision-making abilities, the pre-test mean scores indicate that students scored the lowest on item 11 ($M=2.51$, $SD=1.00$) which is about planning their schedule. In the post-test scores, there was a great positive change in item 11 ($M=3.45$, $SD=0.937$). Mean scores of all items in this sub-category increased in the post-test as can be seen in table 13.

Furthermore, in the pre-test, %37 of the students ($n=18$) disagreed, and %6 of the students ($n=3$) strongly disagreed on the statement that they should evaluate their English. In the post-test, none of the students gave a negative answer, and %92 of the students ($n=45$) either agreed or strongly agreed that they should evaluate their English.

Next, %55 of the students ($n=27$) stated that they did not have clear goals for improving their English skills at the beginning of the semester. This number dropped to %20 ($n=10$) in the post-test and %80 of the students ($n=39$) stated they had clear goals for improving their English skills. In a similar item, students were asked whether have a clear idea of what they need English for. In the pre-test, %39 of the students ($n=19$) answered negatively and %35 of the students ($n=17$) answered positively.

There was a huge difference in the post-test as %76 of the students (n=37) either agreed or strongly agreed on the statement.

The pre-test scores indicate that students had the opinion that they can decide what they should learn in English as %69 of the students (n=34) either agreed or strongly agreed to the relevant item (item 30). Similar results were seen in the post-test scores as %78 of the students (n=38) either agreed or disagreed with the same statement. While that is the case, on the statement *I am able to choose learning materials for myself*, there were mixed results as %45 of the students (n=22) answered positively and %29 (n=14) answered negatively while the rest of the students were neutral in the pre-test. In the post-test, %47 of the students (n=23) answered positively to the relevant item while %16 (n=8) answered negatively and %37 (n=18) were neutral. We can infer that more students thought they could choose what to learn while not as many students could choose learning materials for themselves.

In item 17, %72 of the students (n=30) stated that they have difficulty deciding what to study outside class, and %29 of the students (n=14) stated the opposite in the pre-test. The number of positive answers dropped to %38 (n=18) while %41 of the students (n=20) stated that they could decide what to study for outside class.

To summarize, students had a better idea of what they need English for and a better perception of how to improve their English skills. In addition, they seemed to have a better grasp on what to study outside of the class and were more confident about choosing what to learn by themselves. However, many students had trouble choosing learning materials for themselves both in pre-test and post-test. This indicates that they still require teacher assistance on this matter. In conclusion, it can be deduced that students' decision-making abilities improved positively in every aspect of the post-test results.

4.3.3 Findings about students' motivation towards learning English. The third category of the learner autonomy readiness questionnaire was related to students' motivation towards learning English. The obtained results are presented in the Table below:

Table 14

Descriptive Statistics for Pre and Post-test Motivation Dimension

	Pre-test		Post-test	
	M	SD	M	SD
2. Learning English is enjoyable for me	2.78	1.00	4.55	.61
5. I look for opportunities to read as much as possible in English	2.90	1.06	4.14	.70
8. I try to find as many ways as I can to use my English.	3.33	1.28	4.27	.73
19. If I learn English, I will be able to get a better and well-paid job.	4.16	1.17	4.27	.83
23. Even if there were no attendance requirements in the English course, my attendance would be high.	2.65	1.01	3.90	.94
25. I believe that I will be successful in the English class.	2.37	1.14	4.37	.63
27. English is important to me because it will broaden my point of view.	4.04	1.02	4.51	.58
29. I can honestly say that I really put my best effort into trying to learn English.	4.10	.84	3.84	.87

The descriptive analysis suggested that the lowest mean score ($M=2.37$, $SD=1.149$) in the pre-test was on item 25, which asked about students' beliefs on their success in the English class. This displayed a lack of belief from students before starting their department lessons but the post-test score ($M=4.37$, $SD=0.636$) suggests that this was no longer the case at the end of their first semester.

When asked whether learning English is enjoyable for them, %16 of the students ($n=16$) agreed and only %6 ($n=3$) strongly agreed in the pre-test. However, %61 ($n=30$) strongly agreed and %33 ($n=16$) agreed with the statement in the post-test. The reason for the low enjoyment of English in the pre-test could be due to their high-school classes or preparatory school courses, yet the overall perception turned positive at the end of the semester.

In item 5, only %27 of the students ($n=13$) stated that they look for opportunities to read in English in the pre-test. In the post-test, there were no negative answers to

this item, with %82 of the students (n=40) stating that they look for opportunities to read in English as much as possible. In a similar item (item 8), %51 of the students (n=25) stated that they try to find ways to use English in the pre-test, and %84 (n=41) stating the same in the post-test. The drastic difference between the items in pre-test scores could indicate the unwillingness to read in English compared to other skills. Similar post-test results for both items would suggest that their reading habits in English have improved drastically.

In the pre-test, %47 of the students (n=23) stated that their attendance would not be as high without attendance requirement, which reduced to only %6 (n=3) in the post-test. Furthermore, %80 of the students (n=39) had the opinion that learning English will enable them to get a good job, and %83 of the students (n=41) shared the same opinion in the post-test. Additionally, students found English very important in terms of broadening their point of view according to the results of item 19, as %77 of the students (n=38) either agreed or strongly agreed with the statement in the pre-test and %83 (n=42) in the post-test.

Finally, %78 of the students (n=38) stated that they put their best effort into learning English in the pre-test compared to %65 (n=32) in the post-test. While most of the students claimed to put their best efforts into learning, %69 of the students (n=34) stated that they did not believe they would be successful in the English classes in the pre-test. Post-test results of the same item showed no negative answers and %92 of the students (n=45) either agreed or strongly agreed with the statement that they will be successful.

To summarize, students' scores on items related to motivation increased overall, except for the item related to their efforts in learning English, which was reduced in the post-test. Students reported that they are more motivated to attend classes and in improving their English in general. In addition, a considerable number of students found English more enjoyable after their first semester.

4.3.4 Findings about students' use of metacognitive strategies. The last category of the learner autonomy readiness questionnaire was related to students' use of metacognitive strategies while learning English. The obtained results are presented in the Table below:

Table 15

Descriptive Statistics for Pre and Post-test Metacognitive Dimension

	Pre-test		Post-test	
	M	SD	M	SD
4. I am able to identify my weaknesses in learning English	2.61	1.05	4.27	.63
10. I often think about how I can learn English better.	3.24	1.07	4.12	.90
13. I like to look for solutions to my problems by myself.	3.10	1.37	3.96	.81
15. I have my own ways of assessing how much I have learned.	2.41	.99	3.67	.68
18. I pay attention when someone is speaking English.	2.94	1.29	4.49	.64
21. I try to find out how to be a better learner of English.	2.49	.98	4.20	.70
28. I notice my English mistakes and use that information to help me do better	2.65	1.05	4.27	.75
24.. I usually know myself what progress I have made without the teacher telling me.	3.57	.95	4.10	.68

According to descriptive statistics, the statement *I have my own ways of assessing how much I have learned* had the lowest mean score both in the pre-test (M=2.41, SD=0.998) and post-test (M=3.67, SD=0.689). While that is the case, there was an improvement in every item in the post-test results as can be seen in table 14.

Further, in accordance with the frequency statistics, %47 of the students (n=23) disagreed, and %8 of the students (n=4) strongly disagreed with the statement that they are able to identify their weaknesses in English in the pre-test. There were no negative answers in the post-test with %90 of the students (n=44) either agreeing or strongly agreeing with the statement. Similarly, when asked whether they notice their English mistakes and use that information to do better (item 24), %53 (n=26) answered negative in the pre-test and no negative answers were given in the post-test, with %81 of the students (n=40) either agreeing or disagreeing. The results show that students' had a better perception of their awareness at the end of the semester.

In item 10, *I often think about how I can learn English better*, %43 (n=21) answered positively in the pre-test while %78 (n=44) answered positively in the post-test. In a related item, %16 (n=8) either agreed or strongly agreed to the statement *I try to find out how to be a better learner of English* in the pre-test and %84 (n=41) in the post-test. Statistics suggest that students thought about how to improve their English more than before.

Students also seemed to be more autonomous in problem-solving as %47 (n=23) agreed or strongly agreed to the relevant statement (item 13) while %65 (n=32) agreed or strongly agreed in the post-test. Furthermore, most of the students (n=40) reported that they do not need the teacher telling what progress they have made in the post-test, compared to the pre-test (n=25).

In conclusion, the metacognitive dimension of learner autonomy readiness has increased as the statistics suggest. All items had a higher mean score in the post-test results and students' perceptions in terms of problem-solving, awareness of their weaknesses, self-assessment, and independence from their teachers have increased as relevant item statistics show.

4.3.5 Effects of online education on learner autonomy. In order to analyze the effects of online education on learner autonomy, a paired-sample t-test was conducted to find out whether there were any significant differences between pre and post-test learner autonomy readiness questionnaire results. The gathered findings are presented in the Table below.

Table 16

Paired-sample t-test Results for Learner Autonomy Readiness Questionnaire

	Paired-Sample Test						
	t	df	Sig. (2-tailed)	Mean Difference	Std. Deviation	95% Confidence Interval of the Difference	
						Lower	Upper
PostLARQMean	61	49	.000	3.98	.45	3.85	4.11
PreLARQMean	88	49	.000	2.85	.22	2.78	2.91

* p < .05

According to the results of the t-test, pre-test (M=2.85, SD= .22) and post-test (M=3.98, SD= .45) scores indicated that there was a significant increase in students'

learner autonomy readiness after ten weeks of online education compared to the beginning of the semester $t(48)=15.3$, $p < .001$.

4.4 Relationship between Learner Autonomy and Digital Literacy

To find out the relationship between learner autonomy readiness and digital literacy, Pearson's correlation analysis was conducted in SPSS 25. Results were analysed based on the pre-test and post-test results of digital literacy scale and learner autonomy readiness questionnaire. The results of the statistical analysis were displayed (see Table 1).

Table 17

Relationship between Digital Literacy and Learner Autonomy

		Pre-test LARQ	Post-test LARQ	Pre-test DLS	Post-test DLS
Pre-test LARQ	Pearson	1			
	Correlation				
	Sig. (2-tailed)				
Post-test LARQ	Pearson	-.05	1		
	Correlation				
	Sig. (2-tailed)	.72			
Pre-test DLS	Pearson	-.05	-.03	1	
	Correlation				
	Sig. (2-tailed)	.69	.80		
Post-test DLS	Pearson	-.02	.10	-.04	1
	Correlation				
	Sig. (2-tailed)	.87	.47	.74	

* $p < .05$

Table 17 represents the Pearson's Correlation Coefficient that was employed to determine any correlation between pre- post-test digital literacy and learner autonomy readiness levels. According to the results, correlation analysis between digital literacy levels and learner autonomy readiness in the pre-test ($r = -.05$) and post-test ($r = .10$) showed that there is no statistically significant correlation between these variables. One reason for there being no significant results could be the small sample size ($n=47$).

4.5 Semi-structured Interview Findings about the Digital Literacy Perceptions

To find out the digital literacy perceptions of the participants, thematic analysis was conducted. As a result of thematic analysis of both pre- and post-interviews, 4 major categories were identified as well as 10 associated themes. The categories and associated themes can be seen below in Table 17.

Table 18

Major Categories and Associated Themes Related to Digital Literacy

Major Categories	Associated Themes
Efficiency	Time (+) Place (+)
Difficulty	Hard to learn (-) Technical issues on learning platform (-)
Impact on learning	Makes courses more fun (+) Makes courses more interesting (+) Motivates students (+)
Impact on social interaction	Easier to reach people (+) Less face to face interaction (-) Faster communication (+)

As shown in the table above, the major categories identified in the interviews were efficiency, difficulty, impact on learning, and impact on social interaction. After identifying major categories, associated themes were identified for each category. The findings of each category and related themes are presented in the following sections.

4.5.1 Efficiency. Students mentioned the efficiency of ICT use in education in terms of time efficiency as certain tools helped the content to be taught faster as well as the fact there was no commute for online education. Furthermore, students found online education efficient as they could join the lessons from anywhere. Below are some excerpts in support of these findings.

[...] Some people live far away from school and now they can join online with Zoom. I think that is a great benefit (S4, pre-interview)

[...] There are many benefits of ICT for education such as saving time. We don't need to write anything because we can just download the material for example.” (S3, pre-interview)

[...] It is time-efficient because everything is done online instead of prints and face-to-face lessons. (S4, post-interview)

[...] We can watch the lesson recordings, so we don't have to take notes in the class. (S5, post-interview)

As can be seen from the reported opinions of the students, the use of ICT in education, especially videoconference platforms are seen as time efficient as well as convenient since they can attend their courses from their homes. This notion is more evident in the post-interviews.

4.5.2 Difficulty. In terms of difficulty, students had mixed opinions on it in the pre-interview. While some students complained about the difficulty of technology in general, others faced difficulties in certain cases. Below are some excerpts from the first set of interviews.

[...] I am sure that I don't use my computer or mobile phone to its full potential. It is complicated (S1, pre-interview)

[...] Microsoft office programs can be difficult to use depending on what I need to do (S4, pre-interview)

[...] At the beginning using Birdeha was confusing and I could not navigate it properly (S5, pre-interview)

As it is evident from the excerpts, a few of the students found technological devices or programs difficult to use to some extent before starting online education. In addition, a couple of students faced technical issues with the learning platform of the university. However, in the post-interviews, the general attitude towards the difficulty and technical issues was more positive as can be seen in the excerpts below.

[...] I wasn't very good with computers, but I got better over the last few months. I learned how to use Word and PowerPoint faster and better. (S2, post-interview)

[...] I think my ICT skills are better now. I didn't know how to search for information properly, but I can do it now. It helped me a lot with my assignments (S3, post-interview)

As can be inferred, the overall perception of difficulty changed in the post-interviews. Students reported having an easier time with the learning platform as well as programs used for educational purposes. Some students also reported that their searching for information skills has increased, which is an important component of digital literacy.

To wrap up, it can be inferred that many students faced at least some sort of difficulty related to technology throughout the semester. While some found using computers and software difficult, others had problems with the university's learning platform. Finally, the students did not report having any difficulties in the post-interviews.

4.5.3 Influence on learning. When asked about the influence of ICT on their education, students had mostly negative opinions on technology use in the class, and online lessons. Some of the reasons given were related to being less interactive, unnatural, slow, and distracting. Considering these findings, the students said:

[...] I think online platforms are only for homework. They take out the social interaction and online lessons would feel unnatural for me (S3, pre-interview)

[...] I think I would not be able to focus in online lessons. It would hinder my learning (S7, pre-interview)

[...] Without ICT I wouldn't be able to find articles and prepare my assignments. It is good for homework, but I don't like technology in the class. I think it slows us (S8, pre-interview)

As can be deduced from the example quotes, only positive remarks about technology are related to its usefulness for doing assignments. Some students also pointed out the fun aspect of ICT incorporation during the classes, but the overall viewpoint seemed to be on the negative side. However, this changed drastically in the post-interviews, which is presented in the following viewpoints:

[...] It is very beneficial. Lesson recordings, online feedback, web tools, databases, etc are things that impact our education positively (S7, post-interview)

[...] It is very helpful for research and homework. It is beneficial in terms of academic success and I can use my ICT knowledge when I become a teacher (S8, post-interview)

[...] It makes education more fun and interesting. The websites and apps used in classes helped us understand the topics better (S3, post-interview)

According to the gathered findings, while the opinion that technology is beneficial for assignments persisted, the previous overall negative perception changed. Students found ICT integration to be more fun and interesting. They also stated that it helps them to learn more effectively and reported an overall positive opinion on the matter.

To sum up, the students had a negative perception of ICT on the impact of learning at the beginning. Not being interactive, slow, and unnatural were some of the recurring keywords in the pre-interviews regarding ICT use, which changed completely in the post-interviews where students reported ICT use to be fun, interesting, and beneficial.

4.5.4 Influence on social interaction. The perceptions of the participants revealed that ICT had an impact on social interaction. The students expressed overall negativity on the matter and explicitly stated that they preferred face-to-face communication rather than online or technology-based communication methods. The following statements support this finding:

[...] It affects me negatively. I much prefer face-to-face communication (S8, pre-interview)

[...] I don't like technology for communication. I prefer interacting face-to-face (S6, pre-interview)

[...] I think it is faster to communicate online but it feels better to talk to someone in person (S1, pre-interview)

Furthermore, while the students' opinions on ICT and its impact on social interaction became less strong, there was still discontent on the topic. They seemed to accept its necessity but still preferred not to use it and expressed a yearning for face-to-face communication, as illustrated below:

[...] Not being able to talk in person is a negative but I got used to it I guess. It feels better than at the beginning, but I still prefer face-to-face (S6, post-interview)

[...] I used to look at it negatively, but I think it is necessary. I still don't prefer it though (S1, post-interview)

[...] It has both advantages and disadvantages. I don't feel strongly negative about it anymore, but I miss meeting up with my friends and teachers in school (S3, post-interview)

In conclusion, the participants clearly expressed their preference not to communicate with technology in both interviews. They seemed to have gotten used to it by looking at their answers in the post-interviews, but it was clear that communicating online is not something they actively preferred. However, some students saw both advantages and disadvantages in both ways of communication. Although that is the case, we could conclude that communicating online throughout the semester affected them negatively, as some of them expressed in their answers.

4.6 Semi-Structured Interview Findings about Learner Autonomy

As a result of thematic analysis of both pre- and post-interviews, 4 major categories were identified as well as 11 associated themes. The categories and associated themes can be seen below in table 18.

Table 19

Major Categories and Associated Themes related to Learner Autonomy

Major Categories	Associated Themes
Motivation	Motivated with others (-) Motivated alone (+)
Feelings	Anxious in class (-) Bored alone (-) Better focus alone (+) Gets distracted in class (-)
Feedback	Requires teacher feedback (-) Peer feedback (+) Self-awareness (+)
Preference	Individual (+) Pair/Group (-)

According to Table 19, the major categories identified in the interviews were motivation, feelings, feedback, and preference. After identifying major categories,

associated themes were identified for each category. The findings of each category and related themes are presented in the following sections.

4.6.1 Motivation. Considering the answers from the learner autonomy part of the interviews, motivation was perceived as a major category. The students emphasized the motivational role of being in the class with their friends and teachers and expressed the importance of being social, as illustrated below:

[...] Studying in class is more motivating and social. (S4, pre-interview)

[...] I study better in class because we study with friends and they affect me in terms of motivation and we study more together (S3, pre-interview)

By the time the post-interviews were conducted, the students spent a whole semester at home in online sessions. Their opinions on the motivational aspect of being in a classroom seemed to have changed in favor of studying at home and individually. While some students indicated that they enjoyed both online sessions and missed the classroom atmosphere, they also pointed out how relaxing and pressure-free studying at home felt. The following comments support these results:

[...] I like studying alone in my room. There is no pressure, and it makes me want to study more because of the environment (S7, post-interview)

[...] I like both studying alone and with others but being at home with a coffee in your hand and a piece of relaxing music is good. It kind of motivates you to be productive (S8, post-interview)

To summarize, motivation was a recurring theme in both interviews. The answers displayed how motivating being in class with others is for the students in the pre-interviews, while many reported that studying at home in a pressure-free environment felt more motivating.

4.6.2 Feelings. Another theme that arose from the interview findings was student feelings. The focus was one of the most recurrent words in this section, followed by being bored and being nervous. The following excerpts display some of the answers of the students related to their feelings:

[...] I cannot study by myself. I have focus issues. Because I am very active, I cannot study alone but I can focus in class (S2, pre-interview)

[...] I think studying alone is better. When in class we have to work with others and I kind of get nervous and stressed if I make a mistake in class (S6, pre-interview)

As can be inferred from the pre-interview answers, some students perceived studying alone as boring and indicated that they have focus issues while studying alone. However, one student pointed out that speaking in the class makes them nervous and stressed so that they prefer studying alone. One student that emphasized their focus issues also pointed out that they are an active person and that is one reason for not being able to focus alone. The preference to study alone or in class could be inferred as a result of different characteristics. While the opinion that studying in class is better was more common, that seemed to have changed in the post-interviews and are displayed in these viewpoints:

[...] Being in class can be very distracting sometimes. There are advantages for both but I prefer studying alone now (S5, post-interview)

[...] I like studying alone to focus and get something done fast. Sometimes it is boring without people around, but I prefer it for most courses (S2, post-interview)

In contrast to the pre-interview answers, all students had a positive opinion towards studying alone, stating that they found it easier to focus. While some students also mentioned that they miss the classroom, or that they prefer it for certain courses, most of the students preferred studying alone over studying in the classroom.

4.6.3 Feedback. Another theme that emerged from the interview findings was feedback, more specifically, teacher feedback, pair feedback, and self-assessment. Most of the students stated that they preferred to ask their teachers when they needed and almost no student mentioned anything related to self-correction or self-assessment. Considering these findings, the students said:

[...] I don't know how to study alone. In class, the teachers and my friends help me when I am stuck or when I make a mistake (S2, pre-interview)

[...] When I am having trouble with a topic, a teacher that guides me and corrects me feels very good. I can't usually correct myself (S3, pre-interview)

All students emphasized the importance of teacher feedback when they have a problem or get stuck on a topic. Some of the students also underlined the importance of having their friends around to ask questions or help. S3 explicitly stated that they cannot correct themselves and that they need a teacher. The dependence on teachers seemed to have changed in the post-interview findings, as stated below:

[...] I think I can identify my mistakes better now compared to before. This semester everything was individual and that helped me become more aware (S7, post-interview)

[...] Since we had to do all the assignments at home by ourselves, I tried to be more careful about my mistakes because I couldn't ask the teacher all the time. I guess that made me better at spotting my errors (S3, post-interview)

In brief, the students pointed out that during online education, it was not as feasible to get teacher feedback as much as during face-to-face education. They mentioned the importance of doing assignments alone and that they can spot their mistakes better than before. It was also underlined that all class activities being individual was important for them to become more aware of themselves and their mistakes.

4.6.4 Preference. The last major category related to learner autonomy was a preference in terms of classroom activities. Individual, pair-work, and group-work were the associated themes. In the pre-interview findings, it was clear that there was an inclination towards pair and group work, with only one student preferring individual activities. Regarding this category, the following excerpts are from the pre-interview.

[...] I prefer pair work activities because it is the best way to practice, especially speaking (S3, pre-interview)

[...] Group activities are fun since you collaborate and discuss things. I don't like pair or individual activities (S1, pre-interview)

[...] Working with others affects me positively. We can take breaks and relax while studying (s5, pre-interview)

Moreover, some of the reasons for the preference towards pair and group-work were that they were more fun, collaborative and motivating. It was also emphasized that pair-work was paramount for speaking practice. Besides, most of the students explicitly stated that they do not enjoy individual activities. However, some of the students changed their opinion on individual activities, as shown below:

[...] I got used to studying alone over a few months. It used to be distracting but it has grown on me now (S1, post-interview)

[...] I like working individually because you need to do all the work alone and that helps me learn better (S4, post-interview)

[...] Individual work is better if I am trying to learn new information. Group and pair work is great for game-based activities, but I prefer individual work nowadays (S5, post-interview)

In brief, one reason stated in favor of individual activities was the fact that all the work needed to be done alone and that it helps them learn the content better. In addition, the students mentioned that they got used to working individually but they still preferred it for certain activities, like games. Overall, the perception of students about individual work has changed to be more positive in the post-interview, which is in line with the findings of the previous themes.



Chapter 5

Discussion

This chapter embarks on a discussion of the findings presented in the results chapter about the research questions and their relation to the literature in the area of digital literacy and learner autonomy. The main purpose of this research was to investigate students' digital literacy levels, learner autonomy readiness, and the relationship between learner autonomy and digital literacy in online education. In addition, this study aimed to determine students' perceptions of digital literacy and learner autonomy. To meet the objectives of this study, quantitative data were collected with pre and post-test digital literacy scale and pre-and post-test learner autonomy readiness questionnaire. Semi-structured interviews were conducted and analyzed for qualitative data on students' perceptions about digital literacy and learner autonomy. The following section will elaborate on the discussion of each research question in relation to the findings of this study and findings in the existing literature.

5.1 Discussion of Findings of RQ1: Does Online Education Have Any Impact on Digital Literacy Levels of Freshman ELT Students?

The aim of the first research question was to examine the digital literacy levels of freshman ELT students before online education started and after 10 weeks of online education. The pre and post-test results of the digital literacy questionnaire indicated that students had a positive perception of digital literacy and ICT use and that their digital literacy levels increased after 10 weeks of online education. This finding is similar to a study by Meerza and Beauchamp (2017), where undergraduate students reported an overall positive attitude towards ICT use for learning. The role of ICT was investigated in terms of students' attitudes, technical dimension, cognitive dimension, and social-emotional dimension.

In terms of students' attitudes towards ICT for learning, results indicated that the participants had an overall better attitude towards technology after online education. In addition, participants reported that ICT motivated them to learn. Another result of the questionnaire revealed that students were more self-directed and independent as a

result of ICT use in online education. Both of these reported findings are in line with the results of Keshtiarast and Salehi's (2020) study, where students reported to have been more motivated by the use of ICT as well as more autonomous. Another study by Golonka et al. (2014) further supports the obtained results that ICT use in education increases students' motivation to learn. In addition, Guillén-Gámez et al. (2019) concluded that motivation is one of the most important aspects that affect digital literacy and ICT use, which is in correlation with the results of this study.

Overall, the students had a positive attitude towards ICT, more so in the post-test. They indicated that ICT makes learning more interesting and that the teachers should use ICT more during classes. It can be concluded that the online education process contributed to learner perception of ICT use positively. One of the possible reasons for this outcome is that online tools and the learning management system were used heavily during this semester, which was not the case previously. This could have impacted students' attitudes on ICT use as the results showed.

This general positive perception of students on ICT use is in line with related literature on ICT conducted with both undergraduate teacher candidates and in-service teachers (Botero et al., 2018; Cote & Milliner, 2018; Dedebali, 2020; Golonka et al., 2014; Keshtiarast & Salehi, 2020; Liza & Andriyanti, 2020; Meerza & Beauchamp, 2017; Ngo & Eichelberger, 2017; Özüdoğru & Çakır, 2020). It can be inferred from these recent studies that motivation, autonomy, interest are factors affecting students' outlook on ICT and that students are in favor of incorporating technology in their education.

In terms of the technical dimension of digital literacy, the participants had the perception that their problem-solving skills in the case of technical problems were higher at the end of the semester. This can be attributed to their time spent on online platforms throughout the semester and due to the technical issues, they encountered on the learning platform. This finding contradicts the findings from Çebi and Reisoğlu's (2020) study, where participants were found to be the least proficient in problem-solving. The difference in findings could be attributed to the gender imbalance in both studies, as Çebi and Reisoğlu concluded that males were more dominant in problem-solving compared to females. In contrast, the participants of this study were predominantly female.

In general, it was found that the participants had high ICT skills, especially in the post-test, and that they followed new technologies closely. While that was the case, their knowledge of new technologies only had a slight increase at the end of the semester, while their perception of their technical abilities increased significantly. The difference in perception and actual application and knowledge is similar to the findings of Liza and Andriyanti (2020), where participants' DL perception and application did not correlate. This could be the result of a lack of practice, and high self-esteem regarding technology. The lack of experience and practice was reported in the literature (Cote & Milliner, 2018).

To conclude, the participants had positive perceptions of their own technical skills, and that they learned new technologies easily. Several studies reported similar findings regarding positive perception towards ICT use and digital literacy (Cote & Milliner, 2018; Çebi & Resisoğlu, 2020; Gill et al, 2015).

Furthermore, findings related to the cognitive dimension of digital literacy revealed that students already had high web-literacy perception at the beginning, while it increased slightly at the end of the semester. The participants' information searching ability and their awareness of issues of web-based activities have increased throughout the semester. The findings correlate with similar findings in Quintana et al.'s (2012) study, in which it is concluded that as the ICT skills of the participants increased, so did their web-literacy skills.

Findings related to the social-emotional dimension of digital literacy indicated that the participants' perception of collaboration was higher after online education. It can be suggested that the absence of immediate teacher support in online education leads to higher collaboration between their peers. This finding is in line with Duță and Martínez-Rivera's (2015) study, where participants agreed on the importance of ICT on collaborative learning. While collaboration increased, students felt less need to ask for help from their friends. As students' ICT skills have increased in terms of technical skills and they got used to the course work of their first year, students might have had less need for assistance over time. This can be interpreted as ICT use and online education facilitating independence.

To summarize, the participants developed a better perception of ICT use in learning, and their competence in terms of technical skills increased. Their web-literacy skills showed a slight improvement, and they collaborated with their peers

more than they did at the beginning. These findings show the positive impact of online education on the participants' digital literacy levels.

5.2 Discussion of Findings of RQ2: Does Online Education Have any Impact on The Autonomy Levels of Freshman ELT Students?

The aim of the second research question was to examine the learner autonomy readiness levels of freshman ELT students before online education and after 10 weeks of online education.

With regard to autonomy, it was concluded that students had low learner autonomy readiness at the beginning of the semester. This was apparent in the lower mean scores across the questionnaire items in the pre-test. One reason for that could be that learners were not familiar with the concept of autonomy in their earlier education. As such, Putra and Iswara (2019) found that low levels of autonomy are due to participants' lack of understanding of what autonomy is. However, learner autonomy readiness increased across all items in the post-test, which suggests that online education contributed to being more autonomous. This finding can be supported by Öztürk's (2019) findings, which reported positive perspective change towards autonomy. Furthermore, as the results showed, students' belief in their own success increased over the course of the semester, which correlates with recent literature that found a positive correlation between academic success and learner autonomy (Alkan & Arslan, 2019; Lowe, 2009; Tilfarlioglu & Ciftci, 2011).

Motivation seems to be another factor that increased regarding autonomy. The participants found learning English more enjoyable and they tried to improve their English in many different ways. Their awareness of the importance of learning English also improved drastically. Recent literature reflects similar findings, in which motivation and learner autonomy correlated significantly (Güneş & Alagözlü, 2020; Honarзад & Rassaei, 2019; Jianfeng et al., 2018). On the other hand, the analysis suggested that students realized that they did not put their best effort into learning English. This realization can be counted as evidence itself on learners' improved autonomy levels since learners noticed their own shortcomings.

Learners seemed to be more autonomous during the classes as well. They reported that they preferred to choose their own learning materials and that they needed

teacher assistance less. In terms of autonomy in classes, students' perceptions changed throughout the semester to a more autonomous perspective. This finding contradicts Çubukçu's (2016) study, where pre-service teachers preferred the teacher to have more responsibility in selecting topics and activities.

In addition, the decision-making abilities of the participants were particularly low, compared to the other sub-categories in the pre-test. The participants had a lot of trouble in choosing learning materials for themselves. This result is in line with Karabıyık's (2008) study, which suggests that Turkish EFL learners have trouble, especially, with decision-making. This might stem from the education system in Turkey. Traditionally, teachers are the authority figure and students do not have much say on the content and materials. While that is the case, the participants' decision-making abilities increased drastically at the end of the semester. This could be a result of the department's system or could be based on individual teacher characteristics.

As for metacognitive strategy use, the participants felt weak at identifying their own mistakes in English before taking online classes. Similarly, their self-assessment skills were not adequate, and they did not know how to be a better learner. This may not be due to the lack of metacognitive skills of participants, but simply not being able to transfer those skills from L1 to L2 since their metacognitive strategy use increased significantly after online classes. The students' self-awareness and noticing abilities increased, and their dependence on teacher feedback was reduced. These findings are in line with Karabıyık's (2008) study, which reported a medium to a high level of metacognitive strategy use in Turkish EFL learners.

5.3 Discussion of Findings of RQ3: Is There any Significant Relationship Between Digital Literacy Level and Autonomy Level of The Participants?

The aim of the third research question was to examine any potential relationship between the participants' digital literacy level and their learner autonomy readiness after 10 weeks of online instruction.

To begin with, the results showed that there was no significant correlation between digital literacy and learner autonomy readiness of the participants at the end of the semester. While learner autonomy readiness and digital literacy levels increased in post-tests results, for there being no significant correlation between both variables could be explained in several ways. First, the data was collected online through Google

Forms. Online data collection may have lowered the data quality, which would have led to this result. Furthermore, the sample size for quantitative data (n=49) may not have been sufficient for significant statistical results. Lefever et al. (2007) listed several limitations of online data collection, such as lack of willingness to participate, low response rates, and the differences in population groups in reference to response rates such as age, gender, maturity of participants and interests.

To conclude, the obtained results indicated no significant correlation between learner autonomy readiness and digital literacy in freshman ELT students. The lack of significance could be linked to online data collection and its potential limitations.

5.4 Discussion of Findings of RQ4: What are the Perceptions of Freshman ELT Students on Digital Literacy?

The fourth research question aimed to gain insight into the perceptions of participants on digital literacy via semi-structured interviews. Four major categories were identified, with several associated themes. The findings are discussed in relation to the categories and themes in this section.

The analysis of the semi-structured interview answers revealed that the participants found the use of ICT tools as time-efficient, especially videoconference applications. They also found it easier to connect to classes from home rather than having to go to the campus. This finding hints at a major advantage of online tools, which is the freedom to use them anywhere. The time spent on commute was spent more productively, which is in favor of both the students and the instructors. These findings are similar to Scherrer's (2010) study, in which students living far from campus reported favorable views on online education due to time spent on commute, as opposed to students living on campus.

However, there were some negative views about online education and ICT at the beginning. Specifically, some participants stated that they find technological tools too difficult to use and expressed their dislike towards online education and digital tools. While this notion died down at the end of the semester, the participants reported facing technical difficulties on the online platform throughout the semester. It would be fair to conclude that the prejudice the participants had towards online education and digital tools stemmed from not being used to the concept of it. Studies (Bauer & Kenton, 2005; Genet, 2013; Wachira & Keengwe, 2011) supported this finding as in-service

teachers had “fears” about integrating technology in their classrooms. As even experienced teachers are hesitant on this topic, it would be expected for freshman ELT students to be hesitant on using technology for their education.

On a more positive note, the participants emphasized the positive impact of ICT on their learning. Among the popular participant, opinions were related to the fact that ICT makes learning more interesting, fun and that it motivates them to learn. These findings are in line with the findings of Golonka et al. (2014), where learners found technological tools to be interesting and motivating. Some of the answers of interview participants suggested that online games such as Kahoot had an impact on their learning by making the courses more enjoyable. This positive notion towards certain online tools could be due to those tools making online classes more interactive, which was one of the reasons stated by some interviewees for their dislike of online courses. While that is the case, Hwang et al. (2013) emphasized the importance of carefully designing gamified activities, as overusing or not planning properly could lead to negative consequences.

Another finding that emerged from the first interviews was related to social interactions. Students complained about the lack of face-to-face interaction and that it was more difficult to reach out to the teachers and their classmates. This narrative changed to the advantages of faster communication in the final interviews, and most of the participants stated that they were content with online instruction in the end. As students did not have the option to choose between online and face-to-face lessons, the change in the narrative could be interpreted as getting used to the system rather than developing a positive perception. However, the fact that students expressed the advantages of online education as well as using ICT tools, such as LMS and web tools, suggests that their positive feelings were not due to circumstances, but a genuine awareness of their uses and implications. The participants’ positive perception is in line with other studies (Çebi & Reisoğlu, 2020; Liza & Andriyanti, 2020; Özüdoğru & Çakır, 2020), where undergraduate teaching students reported having positive perceptions towards ICT and technology integration.

All in all, the perceptions of the participating students on digital literacy and online education were favorable, similar to the questionnaire findings. It was found that students had prejudice towards ICT and online classes at the beginning, but it can be concluded that exposure to online tools and 10 weeks of online education created a

positive perception on the interview participants. Certain online tools were found enjoyable and interesting as well as motivating. Online courses were seen as time-efficient, and the positive impact on their learning was emphasized.

5.5 Discussion of Findings of RQ5: What are the Perceptions of Freshman ELT Students on Learner Autonomy?

The aim of the fifth research question was to gain insight into participants' perceptions of learner autonomy via semi-structured interviews. Four major categories were identified, with several associated themes.

One of the categories that emerged from the interviews was motivation. Pre-interview analysis indicated that students were motivated when studying with their friends, yet their opinion changed completely to them being more motivated when studying alone. Being more motivated while studying alone is contradictory to the findings from Meşe and Sevilen's (2021) study, where students reported to be more motivated in a social environment, after going through an online learning period. However, some studies showed a link between autonomy and motivation in distance learning (Güneş & Alagözlü, 2020) and technology-based out of class activities (Honarзад & Rassai, 2019). This finding can be suggested as the result of less distraction when studying individually. Being able to focus on the tasks and class content more would lead to a better understanding of the material and higher motivation. Furthermore, the participants mentioned focus and distractions as factors affecting autonomy, as well. Some of the participants reported that they used to get distracted in class and that it was no longer the case in online classes. This perception impacted their preference on classroom activities as well, as most of the participants ended up preferring individual activities in the post-interviews. Therefore, it can be concluded that working individually improved their focus and raised their motivation. This finding is in line with Heemskerk and Malmberg's (2020) findings, in which it was emphasized that student engagement was higher in individual work, compared to group work and pair work.

Overall, online education impacted the students positively in terms of the major categories listed. Their perception of autonomous learning increased and students were more accepting of working individually and independently. The emerged categories seemed to be interrelated with each other, as students reported to be more motivated

while working alone due to fewer distractions, thus were more inclined towards individual activities in class rather than pair or group-work. It is fair to conclude that the participants' perceptions towards learner autonomy were positive in the end and that their readiness for autonomous learning has increased.

5.6 Conclusion

The aim of this study was to investigate the participants' digital literacy levels, learner autonomy readiness, and the relationship between learner autonomy and digital literacy in online education. Additionally, the participants' perceptions towards digital literacy and learner autonomy were examined.

According to the results of this study, the influence of online education on ELT undergraduate students was seen to be positive in all aspects. The overall attitude towards online education and ICT tools changed from negative to positive at the end of the online education process. Technical issues the participants faced reduced over the course of the semester due to a better grasp of the ICT tools used at the university. Furthermore, they stated that the incorporation of ICT made their courses more interesting and that they were more motivated to join online courses. Thus, it can be concluded that online education and the use of ICT tools improved their digital literacy and increased their interest in online education and ICT.

In addition, it was found that the participants became more independent throughout the study. Their need for teacher feedback reduced, which was the result of individual assignments and the lack of instant teacher feedback, due to online education. The students reported to have increased self-awareness of their mistakes and required less peer feedback as well. This led to them preferring individual activities over pair- and group-work activities in their classes. It would be fair to conclude that their readiness for autonomous learning increased as a result of online education and that their perception towards autonomous learning became favourable at the end of the study. However, the results showed that there was no correlation between learner autonomy readiness and the digital literacy levels of the participants.

Although there were some limitations, the research is significant due to the present circumstances. All universities started online education, and that was an unfamiliar concept for most learners. Investigating the concept of autonomy and digital literacy, and their relationship with ELT students in a Turkish setting is not studied

extensively. Combined with the current situation of a global pandemic and the increasing requirement of 21st-century skills more than ever, this research aimed to shed light on these subjects.

5.7 Implications and Recommendations

The present study aimed to investigate digital literacy levels, learner autonomy readiness, and their relationship in ELT freshman students. In the light of the qualitative and quantitative findings, the present study puts forward several suggestions for further study. First, the study was conducted with 49 ELT freshman students. Similar research can be carried out that encapsulates more departments in educational faculties with a larger sample size so that any possible correlations between departments, digital literacy, and learner autonomy readiness can be revealed. Furthermore, a similar study that investigates the relevant factors before and after taking an ICT course can be conducted to gain insight into the impact of ICT training and digital literacy. Finally, a follow-up study could be carried out to find out whether the increased learner autonomy readiness of the participants has any impact later in their pre-service training and on their teacher autonomy.

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