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

MASTER'S THESIS

EXPLORING THE ONLINE READING STRATEGIES OF PRE-SERVICE EFL STUDENTS

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SUPERVISOR
Asst. Prof. Dr. Semin KAZAZOĞLU

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ÖZET

İNGİLİZCE ÖĞRETMEN ADAYLARININ ÇEVRİMİÇİ OKUMA STRATEJİLERİNİN İNCELENMESİ

Online eğitimin her zaman dil öğreniminin bir parçası olacağına inanılmaktadır. Bu süreçte çevrimiçi okumanın önemi kabul edilmekle birlikte yabancı dil olarak İngilizce öğrenenlerin çevrimiçi okuma alışkanlıkları ve çevrimiçi okuma sırasında kullandıkları stratejiler derinlemesine araştırılmamıştır. Bu çalışma İngilizceyi yabancı dil olarak öğrenen İngilizce öğretmen adaylarının çevrimiçi okuma stratejilerini belirlemeyi amaçlamıştır. Buna göre belirlenen karma yöntem çalışmasına iki yüz elli İngilizce öğretmen adayı katılmıştır. Nicel verileri toplamak için Anderson (2003) tarafından geliştirilen "Online Survey of Reading Strategies" (OSORS) ile Maden (2018) tarafından geliştirilen "Dijital Okuma Alışkanlıkları Ölçeği" (DRH) uygulanmıştır. Verilerin analizinde iç tutarlılık güvenirlik ve normallik testleri, betimsel istatistikler, Pearson korelasyonu ve çoklu regresyon analizi yapılmıştır. Nitel veriler görüşmeler yoluyla toplanmıştır.

Araştırma sonucunda, İngilizce öğretmen adaylarının dijital okuma alışkanlıklarının orta düzeyde olduğu, çevrimiçi okuma deneyimlerinin çoğunlukla tatmin edici olmasına rağmen, hala basılı materyalleri okumayı tercih ettikleri ortaya konulmuş ve bu görüşmelerle desteklenmiştir. Ayrıca, okuma psikolojisi boyutu açısından erkek öğrenciler, kadınlara göre ekranda okuma konusunda daha olumlu bir tutuma sahiptir. Bunun yanı sıra, özel bir kurumda okuyan hizmet öncesi yabancı dil öğrencileri dijital okumaya karşı daha olumlu tutumlara sahip olmakla birlikte daha iyi dijital okuma alışkanlıkları vardır. Sonuçlar, üstbilişsel çevrimiçi okuma stratejilerinin yüksek oranda kullanıldığını ve problem çözme stratejilerinin, İngilizce öğretmen adayları arasında en yaygın strateji türü olduğunu göstermektedir. Buna göre, kadın katılımcılar çevrimiçi okuma stratejilerini daha fazla kullanmaktadırlar ve son sınıfta olan öğretmen adayları diğer sınıflardaki öğrencilere göre daha yüksek performans göstermişlerdir. Nitel araştırma sonucuna göre adaylar, çevrimiçi okuma yaparken anlama açısından endişe duymaktadırlar. Ancak, yaşamlarında sıklıkla farklı çevrimiçi okuma görevleriyle meşgul oldukları ve endişelerine rağmen çevrimiçi okumanın okuma alışkanlıklarını desteklediğini düşündükleri sonuçlarına varılmıştır.

Anahtar Kelimeler: Çevrimiçi okuma stratejileri, okuma, çevrimiçi okuma, üst bilişsel okuma stratejileri, dijital okuma alışkanlıkları, öğretmen eğitimi, İngilizce öğretmen adayları, yabancı dil eğitimi

ABSTRACT

EXPLORING THE ONLINE READING STRATEGIES OF PRE-SERVICE EFL STUDENTS

It is believed that online education will always be a part of language learning. Although the importance of online reading is accepted in this process, the online reading habits of English as a foreign language learners and the strategies they use during online reading have not been investigated in depth. This study aimed to identify the online reading strategies of pre-service EFL students. Two hundred and fifty pre-service EFL students participated in this mixed-method study. The "Online Survey of Reading Strategies" (OSORS) developed by Anderson (2003) was administered along with the "Digital Reading Habits Scale" (DRH) developed by Maden (2018) to collect quantitative data. Internal consistency reliability and normality tests, descriptive statistics, Pearson correlation, and multiple regression analysis were conducted for data analysis. The qualitative data were gathered through interviews.

The present study found that the digital reading habits of pre-service EFL students were at a moderate level as they still prefer reading print materials, even though their online reading experience is mostly satisfactory which is supported by the interviews. In terms of reading psychology, male students had a more positive attitude towards reading on screen compared to female participants. Pre-service EFL students who study at a private institution have slightly more positive attitudes toward digital reading and they have better digital reading habits. The results show that metacognitive online reading strategies are of high use and problem-solving strategies are the most common strategy type amongst pre-service EFL students. Female participants reported higher use of online reading strategies and participants who are in their senior year performed significantly higher than those in years below. In addition to supporting quantitative results, the interviews provided a deeper understanding of participants' online strategy use, their habits, and preferred mode of reading. Pre-service EFL students have concerns regarding comprehension when it comes to reading online. Despite these concerns, they believe online reading promotes reading habits and they often engage in different online reading tasks in their daily lives.

Keywords: Online reading strategies, reading, online reading, metacognitive reading strategies, digital reading habits, teacher education, pre-service EFL students, foreign language education,

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LIST OF ABBREVIATIONS

EFL	: English as a Foreign Language
ESL	: English as a Second Language
OSORS	: Online Survey of Reading Strategies
DRH	: Digital Reading Habits
DU	: Daily Use
RP	: Reading Psychology
GLOB	: Global strategies
PROB	: Problem-solving strategies
SUP	: Support strategies

1. INTRODUCTION

Reading has long been a component of human existence and a means of passing information on to succeeding generations. No reading genes exist, making reading an unnatural process (Wolf, 2007). Since its origin, reading has experienced several modifications and is an intellectual endeavor. The realm of information underwent a profound change as a result of the printing press's development. Printing transformed throughout the industrial revolution, and an industrial information society emerged as a result. The reading materials changed over time and during various eras.

The way that technology is used in our lives has dramatically changed over the last several decades. Information transmission may be where technology has the most significant influence. Online data is starting to displace the conventional method of information delivery, which involves printed papers. The development of new technologies in the 21st century, namely the explosive expansion of the Internet, has led to fast changes in the field of conventional literacy.

We were introduced to new technologies and the world of online digital text through this process of progress. New platforms for literacy and education have been made available to these "Digital Natives" via a range of new information and communication technologies (Coiro et al., 2008). The widespread use of technology has extended the idea of traditional literacy. As Coiro (2011) reported, the “Internet continues to transform and define literacy in the 21st century”. For readers to digest text efficiently in light of these developments, new literacy skills are required (Leu et al., 2008). As a result, it is now crucial for students to be able to read, comprehend, and evaluate online materials in to build their literacy (Coiro, 2011). As concluded by Prensky (2001), “today’s students – K through college – represent the first generations to grow up with this new technology” and they are the “Digital Natives,” the “native speakers of the digital language of computers...and the Internet” (p. 1).

Changes in reading habits and the benefits and drawbacks of various reading formats are heavily debated issues on a global scale (Herath, 2010; Liu, 2005; Soroya & Ameen, 2016; Soroya & Amen, 2018; Tenopir et al, 2009). Since the phenomenon is

new and its effects on reading have only just been noticeable, the majority of the work on reading patterns in the digital environment comes from the previous ten years. In light of this context, two issues come to mind: first, what degree of information literacy the reader possesses given that this ability is necessary for electronic reading, and second, how much the readers can interact with digital content utilizing its features/strategies for annotation.

It is challenging to predict how a shift in the digital paradigm would affect emerging nations since they are still building the technical infrastructure and informational resources necessary to match the quantity and caliber of resources found in the majority of industrialized nations. However, both wealthy and emerging nations are going through a significant change. The impact of digital devices on reading habits has increasingly received a great deal of coverage in Pakistani media, particularly among library science specialists, educators, and members of the academic community who are curious about how the digital revolution is changing reading patterns. Many studies have been conducted by researchers from various professions to investigate the reading habits of different demographics. (Awais & Ameen, 2013; Mushtaq et al., 2020; Soroya & Ameen, 2016; Soroya & Ameen, 2018).

For English language learners, the ability to read is equally crucial. For the majority of learners, it is the most crucial ability to master to ensure academic success. English language learners typically develop more quickly in other areas of language study with improved reading abilities. Reading ought to be a fluid, dynamic activity that engages both the reader and the reading material in the development of meaning. However, this is not always the case. The typical learner's second-language reading proficiency is often far lower than their first-language proficiency. This could hinder the second language learner's academic advancement. Both English language teachers and students have several difficulties in the classroom. Before delivering an English language reading course, teachers must take a number of factors into account, including teaching students how to use the skills and knowledge from their native tongue, developing vocabulary skills, enhancing reading comprehension, rating and tracking their progress, and many others. For the learner, learning to read in a second or foreign language entails acquiring new vocabulary and collocational patterns as well as developing the capacity to use these learnings outside of the classroom, where English may be employed.

The use of computers and the Internet in daily life is increasing for L2 readers all over the world. Thousands of L2 readers get their information from online reading. Leu claims that the Internet has infiltrated our three classrooms more quickly than any other type of information and communication technology, including books, television, computers, phones, and other devices (2002, p. 311). The necessity to teach language learners how to read online has risen as a result of the growing usage of computers. According to Coiro (2003), "electronic texts present new supports as well as new problems that might have a considerable influence on an individual's capacity to grasp what he or she reads." Students are increasingly being assigned online learning activities in L2 courses. (Bikowski & Kessler, 2002; Dudeney, 2000; Sutherland-Smith, 2002).

1.1. Statement of the Problem

The necessity for adjustments in our understanding of reading comprehension as impacted by technology has been addressed in the literature. The statement "conventional definitions of reading, writing, and watching, as well as traditional definitions of best practice education stemming from a long heritage of book and other print media will be insufficient." (The National Reading Association, 2001, as cited in Coiro, 2003) recommends creative techniques for teachers and students working with novel and diverse information and communication technology. Researchers debating the future of reading comprehension research acknowledge that "we live in a culture that is seeing an explosion of alternative texts" (Snow, 2002, p. xiv) and that "electronic texts that integrate hyperlinks and hypermedia create some challenges in defining comprehension since they need skills and talents beyond those required for the understanding of traditional texts" (p. 14).

According to the findings of a survey conducted by Shen (2006), the bulk of English as a Foreign Language (EFL) students currently read online rather than on paper. Given the importance of reading in the development of other critical language abilities like as writing, listening, and speaking, educators should not dismiss this shift in reading habits. Additionally, younger people are growing more and more accustomed to accessing entertainment (Shahriza Abdul Karim & Hasan, 2007) and information in digital form. Liu (2005) offers additional evidence that the expansion of digital information and the rise in time spent reading electronic media are

influencing people's changing reading habits. These results demonstrate how reading habits have already been impacted by the digital era.

Since essentially all academic materials are available online and students at this level are obliged to access them, read them for academic purposes, and conduct some internet research for their assignments, term projects, and other things, this situation is more frequent at the tertiary education level. Reading and comprehending academic literature well is the most crucial skill for university students (Levine et al., 2000). As a result, it is expected that EFL and ESL students will be more familiar with online reading and more aware that reading printed books will become less prevalent over the coming decades.

Research from the past demonstrates that while reading for pleasure and reading online has many advantages, reading for pleasure online or in print is more successful and meaningful when students are using the right strategies. According to the argument made by Anderson (2003) argument, strategies are chosen and used consciously by learners who are also actively engaged in the learning process. These definitions make it clear that learner strategies are strategies used by students themselves to facilitate and enrich their learning.

Direct learning strategies and indirect learning strategies are the two basic categories into which learning strategies were classified by Oxford (1990). The use of metacognitive strategies including planning, assessing, coordinating, etc. is a component of indirect learning processes. As can be observed, metacognitive strategies are higher-order executive skills that use cognitive abilities and methods to organize, assess, and coordinate one's learning and acquisition process. (Cohen, 2005; Oxford, 1990; Taki, 2016). Metacognitive reading strategies were divided into three categories by Sheorey and Mokhtari (2001): global strategies, problem-solving strategies, and support strategies. The strategies for managing one's reading process are called global strategies. The steps one takes while interacting directly with the text are connected to problem-solving strategies. Support methods are concerned with the assistance and backing that readers and students receive from outside sources. Given the nature of online reading, these metacognitive strategies are significantly more important. Since we are currently experiencing the height of new literacies, it may be claimed that online reading has to be investigated much like other abilities and other dimensions of language learning and instruction.

According to recent studies, students who don't know how to read electronically tend to get frustrated when they interact with text that comes up in an Internet search because they aren't immediately satisfied in their rush to find answers right away. They might also adopt a "snatch and grab philosophy" that isn't common in print text environments (Sutherland-Smith 2002, p. 31).

Despite everything that is discussed above, little is known about how much can be transferred from traditional reading to online reading. Moreover, there are very limited studies that explore Turkish EFL learners' perceived use of online reading strategies and whether their perceived strategy uses depend on their digital reading habits or if they differ in terms of factors such as gender, type of institution they attend, and their years of study.

1.2. Significance of the Study

As the Internet has grown in popularity, online reading has aroused debate in the field of education, particularly in the field of ESL/EFL. The arrival of computer technology resulted in the development of a new literacy that required the application of skills, techniques, and knowledge to assure the successful use of technology. As a consequence, researchers argued that employing strategies is essential for better comprehension of online reading.

The employment of strategies plays a crucial role in online reading comprehension, which has been generally acknowledged in a significant collection of studies (Afflerbach & Cho, 2010; Coiro, 2011; Park et al., 2014). It is suggested that both native and non-native language learners try out and assess any reading strategies that can help them become successful readers. However, as was already said, pertinent research on the latter demographic has received very little attention.

The patterns of online reading strategies that were discovered in this study take into account the empirical demand for quantitative verification of significant earlier research. It advances the discipline by offering a distinctive and in-depth critique of conventional strategies. An area that needs further research is the interaction between gender, strategy use, and digital reading behaviors, particularly among pre-service English students in Türkiye. Therefore, the findings from these quantitative studies provide educators with information regarding strategies that might improve online

reading performance. In the end, such a study aids practitioners and academics in education in understanding how EFL students read in an online context.

Therefore, the present study aims to explore and investigate the online reading strategies of pre-service EFL students. With the help of the quantitative and qualitative research designs, it is aimed to contribute to the development of online reading by investigating the possible correlations between those notions and digital reading habits, as well as participants' genders.

1.3. Purpose Statement

Reading skills have undoubtedly changed as a result of the production and distribution of information on digital devices. Digital technologies clearly illustrate the multidimensional structure of reading that is based on the word, writing, visual, movement, touch, and space/medium (Amiama-Espaillat & Mayor-Ruiz, 2017; Knobel & Lankshear, 2014; Plester & Wood, 2009). This transformation has also had an impact on reading, leading to the development of notions like speed reading, computer-assisted reading, media literacy, and screen/digital reading. As discussed above, while the intricate digital reading environment has given students new chances, it has also presented particular difficulties (Cho, 2011; Cho, 2014). For educators, a lack of adequate assistance and research may lead to certain issues and ambiguity. It is vital that we know more about the online reading habits of learners before designing online reading tasks. It is important to find out how and which strategies are most frequently used by readers who are using English as a second language to navigate the demands of online reading.

The study aimed to explore the online reading strategies employed by pre-service EFL students in Türkiye. To do so, data was collected regarding their online reading strategies. Since the study also aimed to reach a broader understanding regards their use of online reading strategies, their digital reading habits and other information related to their previous learning experience were also gathered. The interviews were designed to gain more insight into participants' use of online strategies.

1.4. Research Questions

The purpose of the study was to explore the online reading strategies of pre-service EFL students in Türkiye. To get a better understanding of how and why some learners employ them, their digital reading habits and genders were also taken into consideration.

The present study seeks answers to the following questions:

1. What are the digital reading habits of pre-service EFL students in Türkiye?

2. Do their digital reading habits differ according to some independent variables (gender, years of study, type of institution, preferred mode of reading, and their perceived competence of reading online)?

3. What are the online reading strategies used by pre-service EFL students in Türkiye?

4. Does their online reading strategy use differ according to some independent variables (gender, years of study, type of institution, preferred mode of reading, their perceived competence of reading online)?

5. Is there a relationship between the digital reading habits of pre-service EFL students and the online reading strategies they employ?

6. What are the views of pre-service EFL students regarding their online reading and online reading strategies?

Summary

As digital literacy becomes more important and online education grows widespread, it is difficult to ignore that language education is one of the areas that is affected by these developments, as well. Young people who are learning English as a foreign language will come across online texts or online reading tasks quite often. Despite that, their preferences or views regarding online reading have not been explored. Moreover, the challenges they face and the strategies they utilize to tackle issues that arise during online reading have not been popular areas of research. Therefore, this study spotlighted these issues: online reading strategies and digital reading habits and their influences on each other. The study sought to find out how they utilize online

reading strategies but also it was hypothesized that pre-service EFL students with better digital reading habits would use more metacognitive online reading strategies.

1.5. Definition of Terms

ESL learner: A learner of English who lives in a country where English is the first language. USA, England, and Australia are a few examples.

EFL learner: A learner of English who lives in a country where English is not the primary language. China, Japan, and Italy are a few examples.

Internet: The phrase relates to the overall notion of the Internet in this study, but it excludes websites that are not classified and cannot be searched for, such as those on the dark web.

Schema Theory: We use our prior knowledge to evaluate what we read and combine it with the information we are now reading.

Bottom-up: According to this approach, reading is a process of linearly decoding textual symbols into their auditory equivalents as one distinguishes each letter, sounds them out and combines them to make words, and then derives meanings.

Top-down: This point of view says that reading is a method of re-building meaning. In order to determine whether or not one's expectations about the meaning of the text one is about to read are valid, one should first construct a set of hypotheses or predictions about it. If all other attempts at meaning reconstruction have failed, then the decoding form is utilized.

Digital Literacy: It refers to a person's awareness, attitude, and capacity to effectively utilize digital tools and resources to locate, manage, integrate, assess, analyze, and synthesize digital materials, build new knowledge, produce media expressions, and interact with others.

MOnline Reading Strategies: Comprehension strategies that readers consciously employ to accomplish the objective of creating meaning through reading in an online setting.

Global reading strategies (GLOB): The broad strategies readers use to organize, control, and assess their reading, such as establishing reading goals, drawing on prior knowledge, and previewing texts.

Problem-solving strategies (PROB): These are targeted, localized strategies used when reading comprehension issues arise.

Support strategies (SUP): Support strategies are those essential categories that help readers understand the material by having them use a dictionary, make notes, underline, or highlight relevant language.

2. LITERATURE REVIEW

This literature review gives information in connected topics based on the findings of the many studies. Such theories are described here to provide a broader perspective on the theoretical framework of the study. The literature review is organized into five sections: (1) reading, (2) online reading, (3) online reading strategies, (4) reading in a second language, and (5) digital literacy.

2.1. Definition of Reading

A lot of people take reading for granted. We read with what seems to be little preparation and effort (Dehaene, 2009). Aiming for universal literacy is a desirable objective that UNESCO, state governments, and other nonprofit groups have made a priority throughout the years. Efforts must also be taken to lower the illiteracy rate. Taking into account the fact that many individuals read in many languages is also crucial. These readers have virtually always learnt to read in their native language (L1), but they have also learned to read in a second language (L2, which includes both second and foreign languages), frequently in very different (and perhaps challenging) situations. Knowing what proficient readers do while they read is a key component of reading teaching. (Ashby & Rayner, 2006, p. 52)

It becomes clear that no one sentence can adequately express the complexity of reading when we consider the various objectives for reading and the various processes that are involved (Grabe & Stoller, 2020; Stafura & Perfetti, 2017). The act of reading is thought to include a number of intricate processes. Admittedly, reading fluently is a quick and effective procedure. It is quick because we read the majority of texts at 250–300 words per minute. Reading is beneficial in terms of both overall reading speed and the seamless integration of multiple processing abilities. Rapid and automated word recognition, syntactic parsing, meaning construction, text comprehension, inference, critical assessment, and connections to information resources are all coordinated while we read. We do this apparently effortlessly, with

all processes operating at the exact same time (Breznitz, 2006; Christiansen & Chater, 2016; Schwanenflugel & Knapp, 2016).

Understanding is at the center of the reading process. We read in order to get the writer's intended meaning, but we also do more. To make it evident that every cognitive operation involved in reading is connected to this fundamental objective, it is important to emphasize that reading requires understanding. The fact that there are other ways to acquire information outside reading is a secondary reason to emphasize comprehension. Understanding is a process that includes both hearing and maybe seeing (Gernsbacher, 1990).

Reading requires interaction in two different ways. As stated earlier, reading involves several cognitive processes operating almost simultaneously. Fluent reading requires a parallel interaction pattern (Breznitz, 2006). Reading involves communication between the reader and the author as well. Reading also requires a variety of strategic abilities and processes, including the ability to anticipate text material, choose important information, organize and mentally synthesize information, monitor understanding, fix comprehension breakdowns, and align comprehension output with reader objectives. However, being strategic does not always include putting strategies into practice. Fluent readers frequently acquire the ability to automate strategies as well-honed routines, even in combinations. Reading must be a fluid process in order to accommodate these numerous attempts. Fluent readers' adaptability puts the procedures and goals in line with one another. The fact that processes and purposes are in line highlights the fact that reading is likewise a process with a purpose, as has previously been mentioned.

Additionally, reading is a continual evaluation process. Evaluation is related to strategy and purposefulness in that we assess our reading skills on one level (or monitor our reading). Evaluation happens when we choose how to react to a text because we consider whether we agree with or like what the author says or if we find the information presented to be interesting. With practically every text we read, the assessment process transforms reading into a fundamental learning activity as we choose how to react to the content (Beker et al., 2017).

To sum up, reading is a linguistic practice. Without identifying the words to be read and the structural phrases arranging the words, without forming graphemic-phonemic

connections, and without possessing an adequate reservoir of linguistic information, reading is not feasible. Reading comprehension relies heavily on how language is processed. (Alderson et al., 2016; Jeon & Yamashita, 2014; Yamashita & Shiotsu, 2017).

2.1.1. Reading Purposes

It is suggested that there are seven main purposes for reading (Rivers & Temperly, 1978). These include reading to learn more about a subject because we are fascinated about it or for some other reason; to get instructions on how to carry out an activity necessary for our jobs or everyday lives (such as understanding how an item functions); to play a game, perform in a play, or solve a riddle; to read and comprehend business communications or to interact with pals; to be aware of upcoming events, their locations, and their availability; to be aware of what is occurring or has occurred (as published in reports, periodicals, and newspapers) or for pleasure or enjoyment.

Davies (1995) investigates research by Lunzer and Gardner (1979) that specifies several types of reading. The first is receptive reading, or the quick, automatic reading we do when reading narratives; the second is reflective reading, in which we frequently pause and reflect on what we have read; the third is skim reading, in which we read quickly to determine in general what a text is about; and the fourth is scanning, or searching for specific information.

However, Davies (1995) concludes that in real reading performance:

> "…it is difficult to draw clear boundaries between the types of skimming and scanning; in real life, scanning inevitably involves some skimming (and skipping) of large sections of text, and skimming, reciprocally, must embrace some scanning. Furthermore, skimming and scanning both involve fairly rapid superficial reading and both are aimed at searching, rather than deep processing of the text or reflection upon the content of the text" (p. 137).

2.1.2. Reading Theories

2.1.2.1. Schema Theory

The majority of the research on reading development and comprehension that is referenced in academic publications and articles was done with people who were learning to read in their first language in first-language environments. Grabe (1991) argues that the fact that cognitive psychologists have been equally interested in the mechanisms behind literacy development as educators is one explanation for the substantial quantity of study on reading. Psychologists can get important "windows" into certain cognitive processes that are important for understanding the nature of learning, information processing, and other elements of the human mind by observing children as they learn to read. This research has demonstrated that we do not absorb print in a sequential, linear, or sequential manner, as we have already observed. Additionally, we do not use print as "visual tape recorders." Instead, we use our prior knowledge to evaluate what we read and combine it with the information we are now reading.

The impact of readers' own internalized models or ideas about the reading process on reading performance is one intriguing topic of research in the field of second languages. Here, it is important to consider how second language learners conceptualize reading and how their reading performance changes as a result of these internalized models.

Twenty low-intermediate ESL readers from various backgrounds participated in a research conducted by Devine (1984). The individuals were questioned to learn more about their views about reading and what they believed to be "excellent" reading. Devine divided the individuals into three categories based on their responses: readers who were meaning-, word-, or sound-centered. She continued by looking at their conversational understanding, memory, and text reading. These three reader types approached reading quite differently, as seen by the miscue analyses of their oral readings, which also indicated important disparities in what each reader type retained after reading. In a follow-up study, Devine (1988) reported that:

> “Evaluations of unaided retellings of the reading selections also suggested that the internalized models of reading held by the subjects affected recall and comprehension. Those readers who in their interviews indicated that they

considered understanding what the author wanted readers) not surprisingly demonstrated good to excellent recall and comprehension of the text. On the other hand, and, again not surprisingly, readers who equated good reading with sound identification or good pronunciation usually failed to understand or recall what they had read." (p. 129)

The possible applications of this work are fascinating. According to Devine, meaning-centered readers are able to read at levels greater than would be expected based on their overall levels of ability. In other words, they are able to "outperform their competence" due to their internalized beliefs and attitudes. Working on readers' attitudes and presumptions about reading may be a way to solve the issues that second-language readers face. Schema theory contends that by supplying a context for potentially new information, our prior knowledge and preconceptions about the world have a significant impact on our capacity to comprehend it. It is not unexpected that a lot of studies employing schema theory have been done with both first and second-language readers. Schema theory's fundamental tenet is that written or spoken materials do not by themselves convey meaning. Instead, they offer hints or signposts that readers or listeners may use to piece together the original meanings of speakers or authors. Thus, reading comprehension is a collaborative effort between the reader and the text since the reader must match the text's hints to prior knowledge.

2.1.2.2. Transfer Hypothesis

A sound working hypothesis in the field of reading comprehension is that proficient readers in a first language should be able to transfer their skills to proficient readers in a second language. However, it has been found that L1 reading aptitude is unrelated to second-language reading competency. Due to low linguistic competency, the transfer of reading skills from one language to another may seem to "short-circuit." (Cziko, 1978; Clarke, 1979). Cziko asserts that the short circuit did not affect readers at all proficiency levels equally, but rather appeared to have a greater effect on readers with low and moderate ability than on readers with high proficiency. The findings of Cziko and Clarke may be explained by the schema theory, claims Hudson (1988), since readers who are speaking a second language may be using the wrong schema to help them grasp the information.

The main issue at hand is whether or not L2 readers' inability to use semantic and discourse limitations is an indication of low L2 proficiency or if it is an indication of inaccurate schemata construction and reconciliation together with low language competence. Hudson (1988) investigated if the schema theory might account for how proficient readers of foreign languages short-circuit their effective reading strategies. 93 ESL students from different skill levels who were engaged in a language immersion program in the United States for his study, the majority of whom planned to pursue higher education, were the participants. The results demonstrated that the vocabulary and read-test/read-test treatments were more advantageous for readers with advanced and intermediate levels, but the schema application intervention was more advantageous for readers with beginning levels of competence. They show how readers with differing levels of proficiency use different reading strategies and profit from various forms of aid. The study demonstrates unequivocally that pre-reading exercises designed to help students use what they already know about a subject can significantly improve reading comprehension, at least for children with lower abilities.

2.1.2.3. Cross-Cultural Aspects

One area of study of special interest to second language teachers is the effect of background information, particularly cultural information, on understanding. One of the most well-known studies in the area was conducted by Reynolds et al. (1982), who looked at readers' comprehension from two different cultural backgrounds—a sample from North America and another from India. She tested the students' comprehension of two texts, one of which portrayed a wedding in North America and the other an Indian wedding. Steffensen found that her North American subjects did better on the paragraph that described the North American wedding while her Indian subjects did better on the paragraph that described an Indian wedding.

Guyotte (1997) utilized a comparable research design to examine the reading comprehension of various undergraduate student groups at a Japanese institution. Guyotte looked into how well three separate groups understood a paragraph from a medical text. There were three groups of students: one group of non-medical students, one group of pre-medical students (who were enrolled in medical school but had not yet begun their formal medical studies), and a third group of medical

students. Guyotte discovered that individuals' capacity to recognize logical connections in the test material was significantly influenced by their level of topic knowledge in general.

2.1.3. Bottom-up and Top-down Approaches

Reading, according to the bottom-up approach, is a process of decoding textual signals into their aural equivalents in a linear fashion. As a consequence, one recognizes each letter as it comes into contact with it, sounds it out, compares the written symbols to their auditory equivalents, combines them to form words, and finally deduces meaning. As a result, determining the meaning of a word is final stage of the process. On the surface, this seems like a sensible explanation for how reading works. While English uses 26 letters to communicate more than 40 sounds, letters truly represent sounds, and written symbols and their aural equivalents are quite comparable. It seems reasonable to teach pupils these sound-symbol correspondences when teaching beginning reading, and this is the principle underlying the most popular technique of teaching reading, known as the phonics approach.

An alternative to the bottom-up phonics strategy has been developed as a result of work by Smith (1978), miscue analysts, and others. This alternate strategy for reading came to be known as the top-down or psycholinguistic method. This point of view proposes that, in order to establish whether or not one's expectations about the meaning of the text one is going to read are accurate, one first formulates a set of hypotheses or predictions about it. The decoding form is only used after all other attempts at reconstruction of meaning have failed. Reading is a means of rebuilding meaning. This alternate hypothesis, however, also has flaws. According to Stanovich (1980), among others, reading would actually require more time than the decoding method if it were a process of creating and testing hypotheses.

The top-down method's proponents make the supposition that reading fluently and learning to read must inevitably include the same steps. Smith, for instance, contends that proficient readers can quickly identify words. In other words, they work as suggested by advocates of the whole-word strategy, and as a result, this is how kids should learn to read. However, it does not follow that simply because competent readers read by identifying full words on sight (assumed to be how they read), that is

how they initially learnt to read. The most successful and efficient technique to teach reading, in the beginning, is through the use of phonics. Or, it is also possible that different people become readers in various ways, necessitating the use of various strategies by reading teachers to cater to the demands of the various readers.

2.1.3.1. The Interaction of Top-down and Bottom-up Processing

It might seem logical that we are to understand the most basic sense if we want to understand everything else. However, in practice, a reader changes from one type of focus to another all the time. The reader may use a top-down technique to anticipate the likely meaning before switching to a bottom-up approach to confirm that the writer actually said what they thought they had written. We now refer to this as interactive reading. Both methods may be activated by deliberate choice, and both are crucial reading strategies. Reading is a collaborative activity in which the reader alternates between top-down and bottom-up thinking all the time.

2.2. Online Reading

2.2.1. Definition of Online (Digital) Reading

Since using internet resources to read, study, and solve issues has become such a crucial aspect of our lives, serious preparation for the next generation must center on it (Kiili et al., 2018, p. 304). Nowadays, reading on digital devices is a common way for people to communicate information. It is a type of literacy that has to be specifically addressed in all learning environments. Many students worldwide, both L1 and L2, enter secondary and higher education schools with a fair amount of experience utilizing social media platforms, texting on cell phones, viewing YouTube videos, and other online activities. Students of all ages are becoming proficient readers and users of digital media for a variety of objectives.

The phrases "digital reading" and "digital texts" refer to various kinds of reading activities and electronic texts, including those that are substantially the same as print texts but are presented in digital form (e.g., digital journal articles, e-books, and emails). These writings are known as fixed texts because they are basically frozen, much like frozen print texts. Internet-based social media messages are also classified as digital texts (e.g., Facebook and Twitter, apps for texting, and related interactive social media).

The majority of academic digital content accessed through browsers comes in the form of hyperlinked texts, which also include business adverts. These information sources are dynamic and provide a variety of texts. Online digital texts, which refer to reading materials chosen using browsers, and online digital reading, which refers to related reading activities, are also known as online texts and online reading. These latter phrases refer to the many types of text available on the Internet.

According to DataReportal (2021), 4.66 billion people use the Internet globally (or 60% of the world's population), while 4.2 billion utilize social media (or 56%). The relevance of digital literacy in the lives of both L1 and L2 readers will increase as we advance further into the twenty-first century. Digital gadget use skills among students are improving. They utilize their gadgets (such as cell phones, e-readers, tablets, and computers) for a variety of activities, but they primarily use them for online social networking (such as texting, emailing, chatting, and blogging), entertainment (such as watching movies, listening to music, and playing games), accessing QR codes, and doing informal English study (e.g., with Google Translate, online dictionaries, language learning apps, YouTube videos). Some students utilize their technology to keep up with the news, read online publications, or listen to newscasts. Some people like reading on their smartphones (e.g., novels, graphic novels). The majority of pupils really appear to spend a lot more time using electronic devices than reading traditional materials (Kervin et al., 2018). However, the majority of these digital literacy practices do not encourage the development of sophisticated literacy abilities necessary in educational and professional contexts, notably for reading for learning and reading for synthesis. The usage of internet sources for academic purposes can present obstacles for students beyond reading duties in print format, even though statistics on readers' uses of digital media for academic reasons are hard to obtain and assemble (Alexander, 2020; Baron, 2021; Clinton, 2019; Delgado et al., 2018).

2.2.2. Recent Research on Print versus Online Digital Reading

Numerous educational systems have adopted digital-based assessment and learning settings due to their widespread appeal. However, as the results of the current study show, digital settings might not always be the greatest for promoting in-depth understanding and learning. Despite the attraction of virtual learning settings, giving

students physical materials may be a good way to boost comprehension results (Delgado et al., 2018, p. 33)

The characteristics of reading abilities required for secondary schooling and beyond, according to proponents of multi-text online reading, include looking for the most pertinent resources, evaluating and choosing the best sources that match a given literacy goal, synthesizing online material, and applying the knowledge successfully for a given purpose. Even for pupils in primary school, they have claimed that online reading teaching and evaluation should be desired academic objectives. For them, internet reading has to be discussed openly and in-depth since it is considered different from print reading. However, in these situations, it doesn't seem to be a question of reading print texts versus digital texts; rather, the difficult online digital tasks suggested, in which readers find their own relevant and important text resources through a sometimes inaccurate, and frequently minimally informative browser search.

The results of Singer and Alexander (2017a) showed that shorter texts read digitally were more easily understood than lengthier ones read on paper. Students' responses to major concept questions revealed no changes, however reading aloud in print allowed for a more thorough understanding. Despite the fact that digital reading is well-established and growing in the United States, the authors came to the conclusion that neither print nor digital reading should be given preference as being superior to the other in terms of student learning.

From 2000 to 2017, fifty-four studies were examined by Delgado et al. (2018). Between-participant designs were used in 38 studies, whereas within-participant designs were used in 16. Comprehension strongly favored reading in print format for both designs, as indicated by effect sizes ($g = -0.21$ and $d = -0.21$, respectively). The benefit of print reading grew when there were time restrictions on the reading activity. Print reading improved while reading informational texts and informational and narrative texts together, but there were no differences when reading simply narrative texts. Given the recent release of the study, print reading comprehension outperformed digital reading.

Clinton (2019) incorporated 33 empirical papers with random samples in a second meta-analysis (2008–2018). Comparing reading print and digital versions of texts,

reading comprehension was considerably increased by reading print versions (g = 0.25). Expository texts' print comprehension (g = 0.32) considerably outperformed narrative texts' print comprehension (g = 0.04). When reading print-format literature, students exhibited more calibrated (correct) self-assessments of their performance.

More evidence supports the idea that reading materials in print format results in improved comprehension outcomes. 429 students in 5 nations participated in a survey that was conducted by Baron et al. in 2017. (Germany, India, Japan, Slovakia, and the United States). The benefits of reading in print were acknowledged by the students. In a second study, Singer and Alexander (2017b) found that although students were inclined to overestimate their understanding, they claimed they grasped better when reading in digital media. When reading print texts, however, student beliefs were more directly related to actual comprehension achievement. As a result, using printed materials, pupils were better able to gauge their own comprehension. Finally, they observed that although students could recognize the main concepts in both print and digital media, they were able to retain important details about those primary ideas and other pertinent information more readily when reading in print versions.

2.2.3. Challenges of Online Reading

The fact that search, selection, and synthesis abilities will be more and more important for efficient reading comprehension and application reasons is one of the strongest justifications for a greater emphasis on learning to read utilizing online settings (with a variety of self-selected texts). Recent initiatives to include online reading assignments in international evaluations provide weight to this viewpoint. (PISA, 2018; OECD, 2019). As Kervin et al. (2018) argue, “It is no longer sufficient to continue to position online reading as secondary, and tangential to offline reading. Using online information to read … must become the central focus for the thoughtful preparation of this generation” (p. 286). Internet use and digital reading will undoubtedly become more significant factors in the development of reading abilities and advanced reading capabilities.

For reading digital text to be effective, all the same abilities are required as for reading traditional printed texts. However, there are several aspects of reading digitally that vary from reading print material. Online reading passages with

hyperlinks are interactive, multimodal, and non-linear. Instead of reading traditional text, navigating them requires flexibility, attention, focus, and fast judgment in order to identify reliable and important material from the garbage. (Geva & Ramírez, 2015, p. 142)

It is clear that students need to learn how to use an Internet browser, identify pertinent texts, and then read and use texts found through online digital searches, provided that the specific assignment is acceptable for students' ability levels, despite the absence of well-controlled evidence that the medium alone (print or digital) is a source of increased challenge for reading comprehension.

Reading digital texts that are fixed on the screen is not that different from traditional reading. However, it is possible to argue that digital reading imposes a distinct set of reading processes and strategies when online reading tasks involve multiple online texts that must be (a) situated by students, (b) judged for their significance, accurateness, and relevance for a specific task and (c) read with the support of a unique array of strategies for more advanced reading goals. This would be particularly true for multi-link online paths with lots of diversions (Baron, 2021; Cho & Afflerbach, 2017; Coiro, 2011, 2015, 2021; Kiili et al., 2018).

Table 1. Strategic Reading Processes While Reading Online.

1.	Navigate the convoluted pathways inherent in online information searches.
2.	Locate academically relevant online information.
3.	Read online sources critically.
4.	Avoid distraction from the Internet environment.
5.	Judge the accuracy, reliability, and bias of online sources.
6.	Determine authorship.
7.	Make connections within and across online texts.
8.	Use online information responsibly to demonstrate critical evaluation skills.

Source: (Grabe & Yamashita, 2022)

In conclusion, many students struggle to use their electronic devices successfully for academic purposes despite their proficiency and familiarity with doing so for non-academic objectives (Alexander, 2020; Baron, 2021; Coiro, 2015, 2021; Dobler,

2015; Zawilinski et al., 2019). Surely, struggling students frequently lack the knowledge, expertise, and fluent strategic replies required to successfully complete online digital activities. Advanced online reading assignments call for a number of critical strategies, which are listed in Table 1. According to Kazazoğlu (2020) a broad theoretical viewpoint and associated strategies should be provided in light of the rising demand for digital reading. Furthermore, computer reading processing requires special education. Many struggling students find it challenging to learn these strategic procedures. It is generally unfeasible to anticipate that all students (at the secondary and higher education levels) will automatically pick up the skills necessary to complete progressively difficult online reading projects. After all, a majority of graduate students at universities struggle with complex synthesis duties like literature review reviews (whether print or online). Many pupils may require a lot of practice and help from the teacher.

2.3. Online Reading Strategies

The first investigation into non-native readers' usage of online reading strategies was carried out by Anderson in 2003. To assess the use of online reading strategies by 247 ESL and EFL readers, Anderson created the Online Survey of Reading Strategies (OSORS), which was derived from Sheorey and Mokhtari's (2001) Survey of Reading Strategies (SORS). The 38 questions in the modified OSORS were divided into three groups: global reading strategies, problem-solving strategies, and support strategies. According to the research, both ESL and EFL readers used problem-solving methods more frequently than support strategies. However, the findings show that compared to ESL participants, EFL participants used problem-solving strategies more frequently.

Huang et al. (2009) used a novel approach to perform a quantitative study to investigate the adoption of online reading strategies by EFL learners and the implications of these strategies on reading comprehension. The participants were 30 sophomores from a university in Taiwan who were majoring in applied English. They were separated into two groups according to their level of proficiency (high proficiency and low proficiency). A website with 15 integrated strategy buttons was created for this study's data collection and to serve as an online reading environment. The four different strategy types -global strategies, problem-solving strategies,

support strategies, and socio-affective strategies- were used to categorize the 15 strategy buttons. The findings revealed that all participants employed support strategies the most and also, among all types, these strategies had the strongest correlations with understanding.

Additionally, Park and Kim (2011) conducted a qualitative study to determine the different reading strategies used by college-level ESL students to read online literature. Three college-level ESL students from an urban research institution in the Southeast of the United States were the subject of this case study. The primary data was gathered by the researchers using the think-aloud method. The analysis of the data identified seven primary strategy types: dialoguing, utilizing computer apps and accessories, setting up reading goals and plans, previewing and choosing what to read, relating past experiences and knowledge to texts and activities, and inferring.

2.3.1. Reading Strategies

In both L1 and L2 reading studies, the notion that using effective reading strategies is a sign of a strong reader is now largely acknowledged (Anderson, 2009; Ardasheva et al., 2017; Pressley, 2006; Schwanenflugel & Knapp, 2016). The comprehension strategies that proficient readers employ when reading in traditional text settings are well understood. A limited but potent set of reading comprehension strategies are used by skilled readers to actively generate meaning in printed text contexts, according to research (Pressley & Afflerbach, 1995).

Research on L2 reading strategies has a definite starting point. First, discussions of communicative and language acquisition strategies in L2 contexts frequently include reading strategies, even though none of these topics is particularly relevant to L1 reading scholars (e.g., Ardasheva et al., 2017). Second, several subjects covered by L2 reading strategy research are not often of interest to L1 scholars. These include the influence of mental translation, the effect of L1 transfer, and the possible advantage of the L2 learner's metalinguistic awareness. Third, since there are not many studies on L2 reading strategies, it is challenging to generalize most findings or conclusions—aside from when they corroborate findings from L1 reading studies. It turns out that a number of L2 research studies on strategy use agree with findings from L1 strategy research, confirming the applicability of comprehension methods to L2 students (Akkakoson, 2013; Ardasheva et al., 2017; Dabarera et al., 2014).

Previewing and Activating Prior Knowledge

A prereading strategy called previewing assists the reader in foreseeing how the material in the text may be arranged and potential primary concepts. The reader is given the opportunity to employ headers, subheadings, graphics, and titles to activate background information, relate knowledge to the reading task, and take into account how much work will be needed to read the text effectively. Additionally, it gives readers the chance to define their reading objectives and increases their motivation to read and interact with the material. The more general objective of integrating potential knowledge in the book with knowledge the reader already has from past schooling and personal experiences is known as "activating background knowledge." (Almasi & Fullerton, 2012; Schwanenflugel & Knapp, 2016). A variety of students seem to remember material better when past knowledge is activated. From the first through the ninth grade, there were fourteen studies including the activation of prior knowledge, and in all but one of them, comprehension increased (Trabasso & Bouchard, 2002). As long as background knowledge is triggered efficiently, it is commonly acknowledged that this can improve text comprehension.

Predicting

Predicting has been used as a reading strategy since the early days of Reciprocal Teaching (Palincsar & Brown, 1984). It is a strategy that is frequently used to activate prior knowledge. With the use of this strategy, pupils may set goals for incoming knowledge (Schwanenflugel & Knapp, 2016). Making predictions is also a method to think about questions that the future text may address.

Forming Questions and Answering Questions

By encouraging students to question their assumptions about the content they expect to find in a text, question-forming strategies help them become more conscious of what to anticipate. Creating queries regarding potential future text information is quite similar to foreseeing future text information. The reader may be aware that the information is incomplete and may ask (or foresee) what may be required. It is frequently necessary to get instruction in order for pupils to effectively apply the strategy of meaningful question formulation. There is compelling evidence that

creating questions helps students remember text material, answer questions correctly, and recognize major concepts (Schwanenflugel & Knapp, 2016).

Adults' comprehension is often greatly improved by answering questions after reading if they call for utilizing the text's material (Trabasso & Bouchard, 2002). Students' recall of text knowledge was enhanced and they learned answer-finding methods in 17 studies including question-answering training in grades 3 to 8. (Trabasso & Bouchard, 2002).

Summarizing

Summarizing results in much superior comprehension abilities among students in L1 situations, according to a number of early research (Graham & Hebert, 2011; Trabasso & Bouchard, 2002). Several studies have looked at the function of text summarizing in L2 situations. Marzec-Stawiarska (2016) conducted a study with 80 students in which the experimental group (N = 40) wrote summaries 10 times over six months, in order to address the subject of how summarizing might increase understanding. On a common reading comprehension test, the experimental group significantly outperformed the control group (who undertook the usual post-reading coursework) (the Cambridge FCE, or First Certificate in English). More challenging expository texts have proven to be a challenge for students in previous studies that involved teaching L2 pupils (Baba, 2009; Keck, 2014). More crucially, in terms of reading, these studies found a strong correlation between student summaries' rating levels and their reading comprehension abilities.

Monitoring Comprehension

Detecting text issues, increasing text memory, and doing better on common reading comprehension tests were all shown to have significantly improved with direct instruction in a review of 20 studies with L1 readers in the 2nd to 6th grades (Trabasso & Bouchard, 2002; Schwanenflugel & Knapp, 2016). Studies on monitoring comprehension and how it affects L2 readers' reading comprehension are not very extensive.

Using Text Structure Awareness

It has been demonstrated that using text structure awareness is a highly effective way to increase information retention and reading comprehension. Recognizing and paying attention to a variety of discourse signaling systems is a part of text structure

awareness. Numerous studies focusing on expository prose have demonstrated that students who understand text structure and employ text structure resources in their summaries exhibit superior text comprehension (Jiang & Grabe, 2007).

Using Graphic Organizers

The use of visual organizers (such as Venn diagrams, matrices, and flow charts) produces a crucial fusion of knowledge of text structure, primary concept identification, and imagery. The use of graphic representations to arrange text content leads to an increased recollection of knowledge and noticeably greater understanding when it is a strategy that is demonstrated for learners and then adopted by learners.

A greater variety of consistent text structures are proposed by L2 strategies with graphic organizers that mirror the discourse structure of texts; these structures occasionally apply to the entire text organization but more frequently to several subparts of longer and more complicated texts (Jiang, 2012; Jiang & Grabe, 2009).

Inferencing

The use of explicit inferencing teaching does seem to increase students' conscious understanding of how to participate in proper inferencing to analyze textual material or find a suitable solution to a task. In this situation, it is usually believed that inferencing abilities help enhance understanding. However, only a small number of experimental research offer explicit instruction in inferencing as a means of enhancing comprehension in readers who are grade-level or superior. Strong data suggests that inferencing skills are a key factor in differentiating struggling readers from grade-level readers (Elleman, 2017).

Mental Translation

L2 settings provide more alternatives for comprehension strategies, one of which has strong academic support. French L2 students were asked to think aloud while reading an instructive text in Kern's (1994) research. He discovered that there were good reasons for students to participate in such translation processes by comparing the mental translations of students at the beginning and conclusion of the semester. Although Kern offered evidence that mental translation aids L2 student understanding when they attempt to make sense of challenging texts, particularly for students with lower ability, mental translation is frequently perceived as a barrier to

comprehension. Students' comprehension of the material was improved by the mental translation process, which also enabled them to better understand long periods of conversation.

2.3.2. Strategies in Online Reading

Less is understood about how pupils employ comprehension strategies in electronic settings like the Internet (Leu, Kinzer, Coiro, & Cammack, 2004). According to Salomon (1994), printed and online texts are significantly different media requiring different cognitive processes, and new types of strategic knowledge are required to successfully locate, comprehend, and use informational text found on the Internet. However, little supporting evidence has been gathered, particularly among adolescents.

Based on research and pedagogy related to L2 reading strategy, Huang (2013) developed a web-based strategy training program. The program provides four different reading comprehension strategies (Global, Problem-solving, Support, and Socio-affective). Then, this tool was made available to Taiwanese college professors and EFL students for usage and evaluation. Between what professors believed and what pupils really did, there existed a mismatch. Teachers praised global strategies, but students believed support strategies to be more helpful. This discrepancy was explained by the high prevalence of support strategies in the low-proficiency group. The higher frequency of global strategies used by the high proficiency group mirrored teachers' inclination for teaching global strategies. The study came to the conclusion that teachers should explicitly train all pupils to adopt global strategies for comprehensive text interpretation. These results are consistent with those of the study by Huang et al. (2009), which looked at EFL learners' online reading strategies and the impact those strategies had on comprehension. However, exclusive reliance on support strategies did not effectively predict the increase in scores on main ideas and details when the students were reading more difficult texts. The study's findings demonstrated that the use of support strategies predominated strategy use and contributed to the majority of comprehension gains. Overall, the adoption of global strategies considerably improved understanding, especially for students with poor competency.

Coiro and Dobler (2007) carried out a qualitative study to explore new kinds of reading strategies required for learning in an interactive, information-rich, and relatively new text environment. They monitored students' reading on the Internet. The main approaches for gathering data were verbal procedures, interviews, and field observations. The data was gathered using a think-aloud methodology during tape-recorded interviews conducted during the two reading periods. Reading on the Internet is distinctively more difficult in several respects than reading printed material, according to an examination of the data. More specifically, the skilled readers of the study shared findings that suggested effective Internet reading experiences might necessitate the simultaneous and more sophisticated application of (1) prior knowledge sources, (2) inferential reasoning strategies, and (3) self-regulated reading processes. The study discovered that skilled readers seemed to use their subject-matter expertise and printed informational text structures to direct their reading choices and navigation via informational websites and online search environments (Weaver & Kintsch, 1991). The researchers also discovered that experienced Internet users frequently employed inferential reasoning strategies that were influenced by literal matching abilities, structure signals, and context cues as they decided what and where to read on the Internet. Third, the proficient readers in the study regularly employed established self-regulated reading strategies such as goal setting, prediction, monitoring, and assessing the applicability of online content for a specific reading purpose (Duke & Pearson, 2002).

Taki and Soleimani (2012) examined the online reading strategies utilized by Iranian EFL students as well as the disparities in online reading strategy usage between male and female learners. Additionally, it made an effort to address the issue of whether experienced strategy users in an offline setting are likewise strong strategy users in an online setting. According to the findings, participants utilized online reading strategies selectively. The two types of reading strategies most frequently employed were global and problem-solving. The study found that while there were no overall statistically significant differences between males and females in their usage of online reading strategies, there were significant disparities between them on a number of specific strategies. The results also showed that those who used an active strategy in an offline setting similarly used an active strategy in an online one.

Yaghi (2021) studied how metacognitive online reading strategies influenced online reading attitudes. According to the statistical study, students prefer to employ assistance tactics to handle challenges that may develop when interacting with online information. Students frequently expressed the disposition of contemplation in their questionnaire responses. Furthermore, the findings confirmed the study's purpose of demonstrating the impact of metacognitive online reading practices on online reading attitudes. Our findings establish the framework for future studies that address various aspects of online reading dispositions by providing a thorough understanding of the nature of the relationship between metacognition and dispositions.

2.3.3. Metacognitive Strategies

Several reading strategies for paper-based environments were inspired by literature, and it is essential to do the same for web-based environments. The three main types of reading strategies are cognitive, metacognitive, and support strategies, with the metacognitive strategy being the most crucial one (Anderson, 2003; Sheorey & Makhtori, 2001). Strategic awareness and monitoring are significant aspects of proficient reading, claim Sheorey and Makhtori (2001). They assert that readers utilize metacognition as a self-control strategy to check and improve understanding. Skilled readers must be aware of the many reading strategies and know how to apply them effectively.

Taki (2015) sought to find out if first-language (L1) readers from various linguistic backgrounds would use similar metacognitive online reading strategies and whether L1 reading strategies may have an impact on reading online in a second language (L2). The results of this study imply that metacognitive reading strategies are transferred from L1 to L2 in the online environment, which may be useful for readers who do not rely too much on a bottom-up strategy for reading in their L1. Therefore, strategic knowledge is a critical reading skill that EFL teachers must foster by including metacognitive strategy training into reading lessons. The importance of strategy training, even for L1 readers, led Baker (2008a) to predict that by 2030, metacognitively-oriented reading instruction will be a staple of the educational system.

Malcolm (2012) documented the adoption of metacognitive reading strategies by EFL Arab university students. It examined 160 Arab medical students in Bahrain

who were proficient in English and in their first year of study as they read academic literature while using metacognitive reading strategies. In contrast to the habits of upper-year students and students with a high English proficiency level, students with low English proficiency levels and first-year students tended to employ translation strategies more frequently than reading strategies.

Temur and Bahar (2011) investigated the metacognitive reading strategies utilized by 132 Turkish students enrolled in a public university's English Language Education program. It was found that students first applied problem-solving, then global, and support reading strategies, respectively. The least utilized strategies were support strategies to enhance perception and to improve recalling. They reported utilizing problem-solving strategies to address comprehension issues, global strategies such as pre-reading to understand the material, and support strategies to promote recalling. First-year students used reading strategies more frequently than second and third-year students, which suggests that as grade increases, the frequency of reading strategy use decreases. Finally, compared to their male counterparts, female students reported using reading methods more frequently.

According to Mokhtari and Sheorey's (2002) classification of metacognitive reading, strategies are as follows: Readers can utilize strategies including previewing material, reading with a purpose in mind, and employing context clues to help them grasp the content by applying global strategies (GLOB). Readers utilize problem-solving strategies (PROB) when their comprehension difficulties grow when reading texts. PROBs are regulated, deliberate strategies. Rereading the material, figuring out the meaning of terms you do not know, and changing your reading pace are a few examples. Support strategies (SUP) are fundamental tools that readers may employ to understand the material they are reading. These include underlining or highlighting textual content, making notes, and utilizing dictionaries.

2.3.3.1. Support Strategies

Support strategies are those essential categories that help readers understand the material by having them use a dictionary, make notes, underline, or highlight relevant language. A web-based reading program was developed by Huang et al. (2009) to examine how EFL university students in Taiwan employ online metacognitive strategies. The reading of four articles using the four kinds of

strategies—global strategy, problem-solving strategy, support strategy, and socio-affective strategy—was required of the participants. According to the research, problem-solving strategies were least employed, while support strategies were used the most frequently. The employment of support strategies also indicated comprehension improvements in the overall memory scores, recall scores on key concepts, and recall scores on details across students in both high and low-proficiency groups taken individually as well as among all students in this study. The three levels of comprehension among all pupils were raised through support strategies. The majority of the time, it seems that support strategies, the most commonly applied of all the strategies, helped in reading comprehension.

2.3.3.2. Problem-Solving Strategies

The processes and approaches that readers employ when interacting directly with the text are referred to as problem-solving strategies, among other reading strategy types. These are targeted, localized strategies used when reading comprehension issues arise. Examples include changing the reading pace according to how challenging or simple the content is, assuming the meaning of words that aren't clear, and revisiting the text to increase understanding. Readers who struggle with complex texts might utilize problem-solving strategies to better understand them by visualizing the text's content and inferring word meanings from context cues. When PROB are ineffective, support strategies including taking notes, paraphrasing, utilizing a dictionary, or translating are used (Huang, 2013; Taki, 2015).

The study findings on the subject of examining the connection between the employment of strategies and the reading proficiency of ESL and EFL students have the inclination to favor problem-solving strategies. Taki (2015) contrasted L1 and L2 metacognitive online reading strategy usage. In comparison to English native speakers, he discovered that Iranian English speakers adopt a medium strategy of strategies, favoring problem-solving strategies over global and support strategies. Students like problem-solving strategies more than other strategies, according to Huang & Nisbet (2014) and Madhumathi & Ghosh (2012).

The employment of reading strategies by 403 Filipino university students (19–20 years old) from various academic departments was examined by Daguay-James & Bulusan (2020). Different academic disciplines showed a substantial variation in

strategy utilization, with criminology students utilizing reading strategies somewhat less frequently than the other subjects (medical laboratory science, political science, and psychology among others). Depending on the participants' subjects of study, different individuals used global and support strategies. However, the amount of problem-solving strategies utilized varied little among groups. Overall, support strategies (mean score of 3.63) and problem-solving (mean score of 3.90) were more frequently used than global strategies (mean score of 3.62). Global strategies were the least preferred (mean score of 3.62). Non-native readers regularly adopted reading methods, according to Yüksek and Yüksel (2012), who discovered that this increased their metacognitive awareness. Since problem-solving strategies were essential for comprehension, their data show that non-native readers tended to utilize them more frequently.

2.3.3.3. Global Strategies

Global strategies, including previewing and predicting, relate to those that are consciously intended to track the reading process. Readers use broad strategies to organize, control, and assess their reading, such as establishing reading goals, drawing on prior knowledge, previewing texts, and determining if the text content is appropriate for those goals. Huang (2013) argues that while students believe support strategies are more successful when they read online, teachers find global strategies to be more helpful. However, groups of pupils are also divided based on competency. He claimed that pupils at higher levels employ global strategies more frequently.

Barrot (2016) examined whether the reading strategies used by L2 readers varied depending on the kind of content. Twenty-one L2 students (aged 16–17) from a private institution in the Philippines participated in the study. The findings revealed that students utilized a variety of strategies but that the text type had no discernible influence on which types were chosen. The average usage of global strategies was 3.63 on the MARSI's 5-point Likert scale, followed by the average use of problem-solving strategies (3.42) and support strategies (average of 3.1). According to Barrot, teachers can support particular reading strategies that are advantageous to students by using this information.

Amer et al. (2010) evaluated how first- and fourth-year Omani university students used metacognitive reading strategies in an Arab university setting. According to the

results, the participants at both levels used online reading practices to a modest extent. However, fourth-year students reported much greater usage of global strategies than first-year students. The top 10 reported strategies by fourth-year students were global strategies, while the top ten online reading strategies were employed irregularly by first-year students.

Rianto (2022) studied the association between Indonesian university students learning English as a foreign language and their use of Metacognitive Online Reading Strategies (MORS) and Online Reading Comprehension (ORC). The sample size was 602 students. While students from the three majors used global reading strategies to a moderate amount, they used general MORS, problem-solving strategies, and support strategies substantially. Only among language majors was a substantial relationship identified between ORC and MORS usage overall, as well as between ORC and problem-solving strategy utilization. The overall MORS use and the global reading strategy use predicted the ORC of students majoring in languages.

Chen (2015) investigated how EFL learners view using online reading strategies and whether there are differences in how they perceive using strategies based on gender and proficiency levels. The findings demonstrated that EFL online readers frequently employ more general reading strategies, such as utilizing contextual cues and paying attention to tables, figures, and pictures in the online text to improve understanding. According to earlier studies, high-level learners employed more global and problem-solving strategies than low-level learners. Furthermore, there is no difference in the strategy that males and females adopt strategies.

Eight of the top 12 strategies utilized by EFL and ESL learners, according to Anderson (2003), were problem-solving strategies. On the other hand, İnceçay (2013) argues that low intermediate L2 English learners employ global reading strategies the most. The online reading strategies of high- and low-level students were also examined by Huang et al. (2009), and they discovered that while both groups used support strategies more frequently overall, the highly competent group employed global strategies more frequently than the other group. Global strategies are often favoured by proficient readers, and beginners should strive to use them in order to become successful readers.

2.4. Reading in a Second Language

To succeed in today's world, citizens must be proficient readers. Success is not guaranteed for someone who lacks the reading ability, but success is considerably more difficult to come by. There is no way to modify this reality about reading despite the development of the computer, the smartphone, and the Internet. If anything, the huge amounts of information that are made accessible to us through technological communication only make it more important for us to have excellent reading strategies and abilities.

Many students utilize their L2 reading abilities to pursue additional education, land a decent career, travel, access information, increase their awareness of various cultures, interact with people, or just for fun. It is clear that having good L1 reading skills will be advantageous for people living in modern society. However, it is also true that L2 reading abilities are important for millions of people as they navigate their jobs and want to grow in contemporary economies. Future prospects for success and prosperity for a person will be even more dependent on their capacity for reading. Therefore, it is crucial for society to provide everyone with the chance to develop their reading skills, which in many cases entails developing their L2 reading skills.

2.4.1. Factors Influencing Second Language Reading

2.4.1.1. Motivation

Reading motivation is defined as “the individual’s personal goals, values, and beliefs with regard to the topics, processes, and outcomes of reading” (Wingfield & Guthrie, 2000, p. 405).

When Jung (2009) examined the connection between reading motivation and success among EFL university students, Jung discovered that both intrinsic motivation—they want to read in English—and extrinsic motivation—the desire to read in English—were positively correlated with reading success. Extrinsic motivation is prioritized in other research when it comes to L2 reading. For example, Dhanapala (2008) investigated the motivation of L2 readers among EFL college students in Sri Lanka and Japan. Her findings revealed that extrinsic motivation was directly correlated

with reading frequency and that both Japanese and Sri Lankan pupils tended to read for extrinsic incentives.

Similarly, Lin et al. (2012) found that only an extrinsically oriented dimension could accurately predict students' L2 reading comprehension in their research of fifth-grade bilingual pupils in Hong Kong (i.e., Instrumentalism). Bush (2014) found that only extrinsic motivation was a substantially contributing factor (p =.032) when looking at the predictive value of the eleven motivational categories on English reading comprehension among Turkish EFL ninth-grade students; intrinsic motivation was almost significant (p =.073).

The data from Dhanapala and Hirakawa (2015) which looks at university students from Sri Lanka contradicts the notion that extrinsic motivation and L2 reading comprehension are positively correlated. The findings of this study showed that intrinsic motivation had a favorable link with L2 text comprehension, but the extrinsic drive had a negative relationship.

Ahmadi et al. (2013) looked into the connection between students' reading motivation and comprehension in the setting of Malaysia. They looked at a variety of factors in their study, such as text genres, particular vs generic settings, and the self versus external sources of motivational information. The motivation constructs covered in their study were interest, perceived control, cooperation engagement, and efficacy. They discovered through qualitative study that reading motivation enhances reading comprehension. Tests of reading comprehension can be more successful for students who are more motivated.

2.4.1.2. Socioeconomic Status

The student's household resources (Güllerolu et al., 2014; İnce & Gözütok, 2018) and school type (Rajchert et al., 2014; Rogiers et al., 2020) were discovered to be beneficial determinants on reading performance when studies employing PISA data were investigated. In addition, students' use of metacognitive techniques varied depending on their socioeconomic background (Callan et al., 2016). According to Lee and Wu (2013), students' socioeconomic statuses were related to their reading literacy scores and preferred metacognitive strategies. Also, pupils from higher socioeconomic backgrounds performed better academically and used metacognitive techniques more effectively. According to Callan et al. (2016), home socioeconomic

status, school socioeconomic status, and metacognitive methods all have a favorable correlation with reading achievement. However, there we no studies that dealt with type of institution and how it might affect online reading in Turkish EFL contexts.

2.4.1.3. General English Proficiency

Anggraini et al. (2022) claim that the online reading comprehension of students is greatly influenced by their overall English skills. Twenty-nine students from the English department, representing a range of skill levels, participated in the researchers' correlational study. An English proficiency exam and an online survey of reading strategies (OSORS) were used to collect the data. The data suggests that in order to encourage pupils to have excellent online reading comprehension, reading teachers should take into account other language abilities. Their findings concur with those made by Habók and Magyar (2019) in their research. They claimed that a student's general English proficiency directly affects how well they read.

According to Bakhshalinezhad et al. (2015), whereas advanced EFL students utilized all of the tactics (included in the study's strategy table) in their English texts, intermediate students only used part of them and also used their methods at different frequencies from the advanced students. The results confirmed the idea that the competence level of the learners may be connected to the employment of the reading strategies. According to the learners' ability level, the data also supported the notion that reading strategies may be transferable from one language to another.

Clapham (1993) suggested that learners' proficiency levels have a significant strategy on the strategies they choose to employ in second-language reading activities and that more skilled learners comprehend texts better as a result of the effective and suitable strategies they employ. Han (2018) investigated how Chinese young English language learners strategically processed information in a global test. His findings on the impact of test performance levels on strategic processing showed that high-achieving students used both cognitive and metacognitive strategies more often than test-takers who performed poorly. Less adept readers were also shown to employ unstructured and unsuccessful strategies, according to Ghavamnia et al. (2013).

Sheorey and Mokhtari (2001) looked at the differences between native and non-native English speakers' stated reading strategies used when reading academic papers. While US high-reading-ability students appear to value support reading

strategies more than low-reading-ability US students, both ESL and US high-reading-ability students exhibit comparable degrees of higher reported utilization for cognitive and metacognitive reading strategies than lower-reading-ability students.

According to Zhang et al. (2008), reading strategies utilized by Singaporean primary school students are examined from a cognitive standpoint. The study's findings imply that participants' flexible and appropriate use of reading strategies varied by language proficiency and grade level, with the high-proficiency group surpassing its lower-proficiency counterpart in terms of performance and the high-grade group outnumbering the lower-grade group in terms of the number of methods utilized. Qualitative results from case studies served as another illustration of these variations.

2.4.1.4. Gender

One of the most puzzling topics in PISA studies is the link between gender and reading proficiency. In most studies, girls perform better in reading than boys (Rogiers et al., 2020; Solheim & Lundetrae, 2018). This discrepancy is sometimes related to social shifts in perceptions of equal opportunity for men and women, reading incentive, and enjoyment (Rajchert et al., 2014; Rogiers et al., 2020). The advantages of girls in reading comprehension can be explained by gender variations in the choice of metacognitive techniques (Wu, 2014). Contrarily, while some research suggests that females employ metacognitive methods more successfully than boys (Callan et al., 2016), a small number of studies revealed no difference between the sexes (Bembenutty, 2007). There were no studies that dealt with how gender affects the reading habits or online strategy use of Turkish EFL students.

2.5. New Literacies

An individual's capacity to understand what he reads may be significantly impacted by the additional obstacles that electronic texts bring. Particularly on the Internet, there are new text forms, reading objectives, and methods to engage with information that might befuddle and overwhelm persons who have been trained to decipher meaning from solely traditional print. The future of literacy for our pupils will depend on their ability to use the new literacies of the Internet. Sutherland-Smith (2002) observed students engaging with content that was found through an Internet search and found that they "perceive Web text reading as different from print text

reading" (p. 664) and that many Internet users are quickly irritated when their urgent searches for immediate solutions are not immediately satiated.

New contexts are provided by digital technologies, such as blogs, web pages, and instant messaging, and each setting has its own language, objectives, and purpose. To emphasize the variations, literacy is now referred to as literacies or new literacies in plural form (Kern, 2021). Critical thinking, new abilities, and strategies are necessary for new literacies since they are dynamic, diverse, multimodal, and complex (Leu et al., 2017). According to Kern (2021), readers decode and encode online texts in a more complicated manner since electronic media contexts are multimodal, multicultural, and multi-participatory.

2.5.1. Digital Literacy

Many scholars and practitioners have given their definitions of digital literacy, which often have close meanings but slightly distinct foci. For instance, Martin (2005) defines the term as

> "…the awareness, attitude and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, analyse and synthesize digital resources, construct new knowledge, create media expressions, and communicate with others, in the context of specific life situations, in order to enable constructive social action; and to reflect upon this process" (pp. 135–136).

Hague and Payton (2010) state,

> "To be digitally literate is to have access to a broad range of practices and cultural resources that you are able to apply to digital tools. It is the ability to make and share meaning in different modes and formats; to create, collaborate and communicate effectively and to understand how and when digital technologies can best be used to support these processes" (p. 2).

Ferrari (2012) also says,

> "Being digitally literate implies the ability to understand media (as most mediums have been/are being digitalized), to search and being critical about retrievable information (with the widespread of the Internet,) and to be able to communicate with others through a variety of digital tools and applications (mobile, Internet)" (p. 16).

In addition, Ng (2012) notes,

> "Digital literacy refers to the multiplicity of literacies associated with the use of digital technologies. These technologies are a subset of electronic technologies that include hardware and software used by individuals for educational, social, and/or entertainment purposes in schools and at home" (p. 1066).

The term was first coined by Gilster (1997) who defined it as "the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers" (1). This definition can be considered outdated as it focuses only on computers. Hence, several definitions have been made since then.

Eshet-Alkalai and Amichai-Hamburger (2004) define it as "an individual's ability to use the technical, cognitive, and sociological skills that are required to perform tasks and solve problems in a digital environment" (93).

Adding further dimensions to the term, Martin and Grudziecki (2006) note,

> "the awareness, attitude, and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, analyze and synthesize digital resources, construct new knowledge, create media expressions, and communicate with others, in the context of specific life situations, in order to enable constructive social action, and to reflect upon this process" (255).

Hague and Payton (2010) argues that digital literacy is a rather productive process as it "is the ability to make and share meaning in different modes and formats; to create, collaborate and communicate effectively and to understand how and when digital technologies can best be used to support these processes" (p. 2). Similarly, Ferrari (2012) states that the term digital indicates a certain type of ability since "being digitally literate implies the ability to understand media (as most mediums have been/are being digitized), to search and being critical about retrievable information (with the widespread of the Internet) and to be able to communicate with others through a variety of digital tools and applications (mobile, Internet)" (16).

Ng (2012) argues that the notion is too wide for some researchers to encompass a variety of literacies that are intimately tied to digital technology compounds and a variety of important 21st-century abilities. As a result, some academics prefer the phrase "digital literacies" to stress the multifaceted character of the notion rather than

to refer to a single thing that encompasses all forms of literacy. Due to this, the phrase "digital literacies" is defined by Dudeney et al. (2013) as "the individual and social skills needed to effectively interpret, manage, share and create meaning in the growing range of digital communication channels" (2).

According to Prensky (2001), pupils in grades K through college now are the first to have grown up with this brand-new technology. Computers, video games, electronic music players, video cameras, mobile phones, and all the other devices and gadgets of the digital age have been a constant presence in and part of their life. The typical college graduate today has read for fewer than 5,000 hours but has played video games for more than 10,000 hours. Their lifestyles are largely reliant on computers, email, the Internet, cell phones, and instant messaging.

As previously said, using "devices and gadgets of the digital era" has moved from being a talent held by a privileged minority to becoming a part of everyday life. There are many toys and gadgets in our world that help people learn certain skills needed to function as competent system users. In order to define the abilities required to succeed in this digital world, Eshet-Alkalai (2004) and Aviram and Eshet-Alkalai (2006) developed a conceptual model of digital literacy. The following six abilities, which address the cognitive difficulties individuals who use digital environments may have, were included in the framework:

Photovisual literacy refers to the capacity to operate efficiently in graphical-based digital settings, such as user interfaces. Reproduction literacy is the capacity to reproduce and manipulate prior digital text, pictures, and audio elements in order to produce genuine, meaningful written and artistic work. Branching literacy is known as the capacity to build knowledge through a nonlinear navigation between knowledge domains, such as on the Internet and in other hypermedia settings. Information literacy is the capacity to evaluate the information you receive and identify biased and misleading information. Socioemotional literacy requires effective communication in online forums like chat rooms and discussion groups. Real-time thinking ability is known as the capacity to process and assess vast amounts of information in real-time, as in computer games and chat rooms.

NCREL (2003) provides a more thorough framework to describe the components of digital literacy, seeing it as a comprehensive and necessary condition for people

living, learning, and working in a digital society. The following literacies are therefore included in the term "digital literacy":

Basic Literacy refers to attaining one's goals, increasing one's knowledge, and maximizing one's potential in the digital age, one must have the language (in English) and mathematical skills essential to operate in society and at work.

Scientific Literacy is the knowledge and comprehension of scientific ideas and procedures necessary for making independent decisions. involvement in social and cultural activities, as well as economic output.

Economic Literacy refers to being able to recognize economic issues, alternatives, costs, and benefits; to analyze the incentives at play in economic situations; to look at the effects of changes to the economy and to public policies; to gather and organize economic evidence; and to compare costs and benefits.

Technological Literacy is the understanding of what technology is, how it operates, the potential uses it may have, and the best ways to use it to accomplish particular objectives.

Visual Literacy is the capacity to comprehend, use, value, and produce visual content utilizing both traditional and cutting-edge technologies in ways that promote learning, thinking, and communication.

Information Literacy is the capacity to assess information from a variety of sources, to identify when information is required, to search, synthesize, and utilize information efficiently, and to carry out these tasks while utilizing technologies, communications systems, and electronic resources.

Multicultural Literacy refers to understanding and appreciating the similarities and contrasts between one's own culture and other cultures' practices, values, and beliefs.

Global awareness is the perception and comprehension of links amongst international bodies, nation-states, economic institutions, sociocultural groupings, and individuals worldwide.

2.5.2. Elements of Digital Literacy

As previously said, literacy (or literacies, to be more precise) includes a number of abilities that people (should) master in order to live, learn, and work in a digital

society. Similar but distinct definitions of the word have been offered by other academics. As a result, the phrase "digital literacy" refers to a variety of concepts. Table 2 provides a summary of the essential components put forth by various scholars. You can see by looking at these components that digital literacy encompasses a wide range of abilities and traits that have immediate applicability in our daily lives.

Table 2. Key Elements of Digital Literacy.

Researchers	Elements of Digital Literacy
Calvani et al. (2008)	Technological dimension Cognitive dimension Ethical dimension Integration between the three dimensions
Hague & Payton (2010)	Functional skills E-safety Effective communication The ability to find and select information Collaboration Cultural and social understanding Critical thinking and evaluation Creativity
Ferrari (2013)	Information Communication Content creation Safety Problem-solving
Belshaw (2014)	Cultural Cognitive Constructive Communicative Confident Creative

	Critical Civic
Jisc (2014)	Media literacy Communications and collaboration Career And identify management ICT literacy Learning skills Digital scholarship Information literacy
Son (2015)	Information search and evaluation Creation Communication Collaboration Online safety
Chu et al. (2017)	Information literacy Information and communication technology (ICT) skills Media literacy

Source: Arıkan et al., 2019

2.5.3. Digital Literacy in EFL

According to Kern (2021), language learners in the digital age have access to a multitude of resources available via the Internet rather than being reliant on the instructor, the course, and the course materials. These include reference materials (such as dictionaries, grammars, and encyclopedias), tutorials (on a variety of linguistic and cultural topics), artistic creations (such as music, films, and exhibits), day-to-day vocabulary, and most importantly, interaction with other language speakers through social media, forums, telecollaborative exchanges, and other means.

Digital literacies combine the abilities needed to use digital devices and navigate their resources with listening, speaking, watching, reading, writing, and critical thinking. In the last 25 years, language education has entered a "post linguistic condition" (Nelson & Kern, 2012). This does not mean that language education has lost its value or that it is no longer important to learn and teach languages; rather, it

means that it is now more important than ever to recognize how language learning and use are always embedded within larger processes of communication and social interaction action. It is still true now as it was in 2002 when Bruce came to the ironic conclusion that “It is ironic that the research showing how powerful computers can be ultimately brings us back to the familiar idea that it is teachers who make the difference.” (p. 17).

When you use a search engine such as Google or Yahoo, you may rapidly discover the information you're looking for. Second, English is now widely used in everyday life and has achieved the position of world language. Because of the overwhelming number of websites and digital platforms that use it, English has also taken over as the main language on the Internet. Non-native English speakers currently outnumber native English speakers, and it is the dominant language in a variety of international situations (Crystal, 2003). Finally, by bypassing the normal restrictions of time and place, people of varied cultural and geographic backgrounds may easily engage with one another whenever they choose and from any area (Kohl, 2008).

Given that communication is increasingly digitally mediated and that learners need digital skills to be fully functional citizens in the twenty-first century, it is clear that globalization and digitization have already transformed the communication landscape in a way that is unprecedented, affecting how and with whom people communicate as well as significantly changing the landscape of language and literacy education (Lotherington & Jenson, 2011).

When schooling is taken into account, Chu et al. (2017) sought to describe the state of educational practices. They argue that the majority of children nowadays attend classes every day and get rote learning and top-down instruction without clearly comprehending how their involvement in school relates to the world outside of their classrooms and their potential for future success in life and work. According to the authors, a lot of students get overburdened and weighed down by never-ending assignments, and tests. If one regularly has the pleasure of dealing with young children, it is probable that one will come across some really brilliant and intellectual students whose enthusiasm for learning has gradually been overshadowed by the demands present in today's school environments. Long-awaited vacations have also become miserable revision times since schools may purposely schedule exams shortly after them. Many schools have unavoidably turned into soulless factories that

discourage, bore, and infuriate their students. As a result, many students may never have the chance to discover the most important human asset —a love of learning, which is facilitated by the pursuit of one's pure interest through inquiry— in a classroom setting.

Jenkins (2009) emphasizes the significance of what kids do online by contrasting their extracurricular activities with those they engage in school. According to the researcher, kids' unique lifestyles do not align with the material they are studying at school. Additionally, it is observed that after the bell rings, the knowledge they are gaining in school will have little to no impact on who they will be. In order to educate children for the real world, schools do not always provide them with the 21st-century skills they need. Instead, schooling frequently acts as a dulling mechanism, increasing traditional abilities like literacy and numeracy and decreasing the 21st-century talents we need to survive in the modern world.

The effective use of educational tools for how to become literate in today's knowledge society is obviously a growing problem, thus EFL classes now should differ from those in the mid-to-late 20th century (Fandiño, 2013). Accordingly, Taylor (2009) asserts that EFL classrooms need to transition away from conventional approaches that only emphasize language skill improvement in order to start implementing new approaches aimed at integrating a variety of language learning and teaching contents, technologies, and lifelong learning skills. In addition, Shoffner et al. (2010) note that in order to succeed in modern English language classes, students must have a thorough comprehension of and the ability to use basic literacy skills. English language instructors must acknowledge the evolving and flexible character of literacies that deal with topics as varied as technology, multimedia, relationships, and culture in place of an all-encompassing single literacy (NCTE, 2006).

According to Fandiño (2013), working explicitly but critically with what professionals have dubbed the "21st-century skills" is one method to address the emerging interests and needs of our students and our society. While educating English learners, these abilities can be advanced. Adding digital literacy-boosting exercises to English classrooms might help students succeed at work or position them for better employment prospects in the future, but more significantly, these

tasks make English classes much more current and engaging for students in the present (Dudeney, 2015).

2.5.3.1. Digital Reading Habits of Gen-Z

Mirza et al. (2021) sought to investigate how Pakistani students used technology and social networking sites. The data was gathered from Pakistani first-year undergraduate students. The results showed that more pupils had access to cell phones in the past than to desktops, laptops, and tablets. Most students favored electronic books for reading for academic purposes, but there was no clear preference for formats for reading for pleasure. The majority of students like using social networking sites. The results also indicated difficulties students may have obtaining reading resources online owing to a lack of technological knowledge.

Akarsu and Darıyemez (2014) examined the reading preferences and attitudes of university students at Atatürk University majoring in English language and literature. They used a questionnaire that included questions on demographics, how often people read things, what they read online, what they did online, what they initially clicked on online, and how to create good reading habits. The topic that received the most readership was "online news." The respondents find internet news to be popular due to its accessibility and usefulness. Online reading of tales and books, sales information, fashion, and sports was the least popular among the respondents. The majority of the participants read material online, demonstrating that they were not apathetic to the reading options of the digital era. They read texts on a wide range of subjects, including information about sales, online news, fiction and novels, humor, food & nutrition, and health. The survey's results revealed that the media and technology had an impact on the respondents' reading preferences.

Waghmode et al. (2020) looked at graduate students' reading habits in relation to determining the motivations behind and purposes of e-resources. They discovered that all digital applications, automated devices, audio and video, hypermedia, and other resources are simply accessible to help readers build their reading habits and meet modern technical requirements. Most of the time in academic settings, students obediently obey the rules put out by their honorary professors and naturally accept the required direction to do so. They came to the conclusion that having academics

promote students' usage of the library's online resources was the most effective strategy.

To determine the state of students' contact with digital materials and the extent of their digital information literacy abilities, Soroya and Ameen (2020) conducted an analysis of the student body. A questionnaire was utilized to gather information for a survey. Students at the big and medium-sized Lahore institutions that have been accredited by the Higher Education Commission (HEC) provided the data. Although the study's findings on students' self-perceived levels of digital information literacy were good, it was clear that they tended to use separate sheets of paper for taking notes rather than the annotation methods associated with digital content. According to these findings, even though students think annotation is crucial, they prefer it to possess a physical appearance.

Liu (2005) asked Americans to self-report changes in their reading habit over the previous ten years in order to document a shift in reading behavior in the digital era. Because the respondents' memory was crucial to this study, careful consideration was given to memory capacity when designing the questionnaire. Given that 83.2% of respondents said their time spent reading on screens has grown, the author discovered that readers were likely to engage in screen-based reading.

In particular, the usage of annotations and other forms of text-interaction was explored by Vandenhoek (2013) while looking at the overall reading preferences and routines of university students. The findings revealed a conflict between readers' preferences for reading on paper and their reluctance to print articles, presumably indicating a reluctant acceptance of screen reading's dominance. The participants used a variety of annotation strategies when reading on paper, but they may not have known how to do so when reading an electronic book or may not have been ready to. These findings imply that students value annotation but desire a physical component to it.

The effect of the Internet on our reading habits was examined by Hooper and Herath (2014). Using an exploratory survey, it looked at people's reading habits both online and offline to identify trends, distinguish between online and offline reading, and assess the effects of the online environment on readers' choices. They had anticipated that reading habits would change as a result of the online environment, which would

also affect memory and information processing. According to the data, there are significant disparities in people's reading habits whether they read online or offline, with more people reading online during the daytime than offline, which is often done more at night and at home. External motives drove more reading online, whereas internal motivations drove more reading offline, hence the underlying reasons were particularly significant. Online focus, understanding, absorption, and memory scores were all significantly lower than offline in their research.

The goal of Maden (2018) was to ascertain the digital reading preferences of aspiring Turkish language instructors. The findings revealed that pre-service instructors claimed they frequently understood the material more quickly and easily while reading on a computer. These findings were in line with the conclusions made by Doty et al. (2001) and Toyoda (2016), who makes the case that well-designed technology tools lighten the load of the knowledge that students must acquire. Based on the time allotted to reading printed information each day, Maden also discovered that there was a substantial difference between the digital reading habits of pre-service teachers favoring those who read printed materials less than an hour each day. On the other hand, it was discovered that there was a substantial difference in the pre-service teachers' digital reading habits, favoring those who had read a book (printed) in more than a month. According to this research, the tendency to read digitally declined as the propensity to read printed books rose.

Narin (2018) examined the experiences of American Communication undergraduates reading digital news in the setting of hypertextuality. Although they enjoyed reading news online, the kids preferred simple linear text. Even if the students' preferences for reading digital material are confirmed, this study is important since it demonstrates the typical linearity of reading patterns. In other words, despite the rising digitization of news reading preferences, reading habits do not exhibit a hypertextual feature.

Abequibel et al. (2021) sought to ascertain the digital reading habits of aspiring reading instructors between the ages of 17 and 40. Data analysis showed that the respondents' digital reading habits are "satisfactory." Additionally, it is shown that the respondents to the study's dichotomous variable on gender showed a substantial difference in their digital reading habits, with men being identified to have superior digital reading habits. Additionally, the research found a favorable and substantial

correlation between the respondents' digital reading habits and their socioeconomic class.

Kayaolu and Akbaş (2014) sought to learn more about the online reading preferences and perspectives of potential English instructors. Data were gathered at two institutions in northern Türkiye using convenience sampling. According to the survey, the emphasis on literacy has shifted from paper to online. Online reading is valued as a source of knowledge, a tool for achieving educational objectives, an essential component of the English language teaching profession, and a necessary component of English language learning. It appears to provide a significant contribution to aspiring English teachers who are building their professional, procedural, and personal knowledge bases in order to become successful educators in the future.

It was revealed in studies by Balcı (2009) and Horzum (2011) that the practice of reading and writing on electronic media had a detrimental impact on the habit of reading books. However, Yildiz and Keskin (2016) found no change in their study that looked at the relationship between attitudes about reading digitally and reading print books. In a study by Sur et al. (2014), which examined teacher and student perspectives on media literacy and defined media devices, it was found that telephones and other digital media tools changed communication behaviors. Furthermore, it was shown that pre-service teachers' digital reading habits varied significantly, favoring those who had social media accounts.

Similar web page findings suggesting internet use has an impact on digital reading habits have been published in the literature (Coiro, 2009; Şahin, Çermik & Doğan, 2009). Similarly, it was noted that research by Keskin, Baştuğ and Atmaca (2016) corroborated the assertion that owning a social media account and utilizing a mobile device boosted people's propensity to read digital media. These outcomes can be explained by the fact that pre-service teachers were members of the Z generation and that they read using digital media to learn, receive news, have fun, and talk. Individuals of the Z generation use technology, the internet, and digital gadgets to meet their needs and develop themselves (Schroer, 2008).

2.6. Review of Related Studies

Online metacognitive reading strategy research has existed for a while. This subject was being looked at and discussed by certain researchers. Thus, the following theoretical background and earlier research were employed by the researchers in creating this study.

Few studies that specifically examined online reading strategies for ESL and EFL populations were discovered in the examination of the literature. The first study examining the internet reading habits of non-native readers was carried out by Anderson in 2003. To assess the usage of online reading strategies by 247 ESL and EFL readers, Anderson created the Online Survey of Reading Strategies (OSORS), which was adapted from Sheorey and Mokhtari's Survey of Reading Strategies (SORS) (2001). 38 items were divided into three categories: global reading strategies, problem-solving strategies, and support strategies in the modified OSORS. According to the research, both ESL and EFL readers used problem-solving methods more frequently than support strategies. Nonetheless, the findings show that compared to ESL participants, EFL participants used problem-solving strategies more frequently. The work of Anderson (2003) work is highly significant being the first study of online reading strategies to focus solely on the ESL and EFL populations.

Huang et al. (2009) used a new approach to carry out a quantitative study to investigate the adoption of online reading strategies by EFL learners and the impact of these tactics on reading comprehension. The participants were 30 sophomores from a university in northern Taiwan who were majoring in applied English. They are separated into two groups according to their level of proficiency (either high or low). A website with 15 integrated strategy buttons was created for this study's data collection and to serve as an online reading environment. The four different strategy types—global strategies, problem-solving strategies, support strategies, and socio-affective strategies—were used to categorize the 15 strategy buttons. The findings revealed that all participants employed support strategies the most and that, of all types, these strategies had the strongest correlations with understanding.

Moreover, Park and Kim (2011) conducted a qualitative study to determine the different reading strategies used by college-level ESL students to read online

literature. Three college-level ESL students from an urban research institution in the Southeast of the United States were the subject of this case study. The primary data was gathered by the researchers using the think-aloud technique. The analysis of the data identified seven primary strategy types: dialoguing, utilizing computer apps and attachments, setting up reading goals and plans, previewing and choosing what to read, relating past experiences and knowledge to texts and activities, and inferring.

A qualitative examination of the online reading processes of seven Asian graduate-level ESL learners was carried out by Park et al. (2014). It was shown that non-native students' ability to read online is significantly aided by a prior understanding of the structure of both print and online texts. However, Park et al. (2014) found that ESL readers utilize monitoring strategies repeatedly during the reading process, which is consistent with the findings of other studies on readers of native languages. This reinforces the monitoring strategy type as a very significant but frequently disregarded feature that is repeated repeatedly throughout the reading process, helping to corroborate the findings of previous monitoring research.

Recent studies reported the online reading use of learners across different levels. Taki and Soleimani (2012) examined the online reading strategies employed by Iranian EFL students as well as the differences in online reading strategy usage between male and female students. They also made an effort to address the issue of whether competent strategy users in an offline setting are likewise excellent strategy users online. Among the 50 MA students of IAU University of Shahreza who applied, 30 were chosen to participate in the study. For the objectives of this study, the Online Survey of Reading Strategies (OSORS) was modified. According to the findings, participants utilized online reading strategies sparingly. The two types of reading strategies most frequently employed were global and problem-solving. The results showed that while there were no overall major differences in the usage of online reading strategies by males and females, there were significant disparities in a number of the individual strategies.

In his study, Omar (2014) aimed to find how postgraduate Libyan EFL students used online metacognitive reading practices. Using the Survey of Online Reading Strategies, quantitative information was gathered (OSORS). The results showed that the participants used metacognitive online reading strategies to a modest extent. The most commonly reported strategies utilized were problem-solving strategies, whereas

support reading strategies were the least frequently reported. The findings showed that postgraduate Libyan students used metacognitive online reading strategies to a moderate extent. According to the findings, postgraduate students utilized problem-solving strategies the most and support strategies the least. The participants' reduced usage of support strategies was explained by the time and effort required for paraphrasing and utilizing a dictionary.

According to Ahmadian and Pasand (2017), Iranian EFL students who read online mostly employed problem-solving online metacognitive reading strategies while using support strategies the least. Also, this study found that while male students believed they were more self-effective at reading online texts, female students employed more comprehensive online reading methods. 63 people participated in this study, which made it challenging to maintain generalizations. However, the extracurricular online reading task for one session that the researchers utilized to strengthen their premise that the students engaged in online reading for a range of objectives is a main strength.

The goal of Mudra (2018) was to identify the metacognitive online reading strategies pre-service EFL teachers utilized and to report their experiences using the strategies. 65 people participated in this study that used mixed methodologies. Semi-structured interviews and the Online Survey of Reading Strategies (OSORS) were used to gather the data. The results revealed that Global Reading Strategies, Problem-Solving Strategies, and Support Strategies were used the most frequently, in that order.

In his study, Öztürk (2018) detailed the metacognitive online reading strategies used with 147 first-year student teachers in Türkiye. There were 54 male and 93 female participants. To assess the participants' metacognitive online reading strategies, he employed Anderson's 2003 Online Survey of Reading Strategies (OSORS). According to this study, support reading strategies were the least often utilized strategy among students and instructors, whereas problem-solving strategies were the most frequently employed. This research included some demographic data on the participants' online reading preferences in both their L1 and L2 languages. It was found that the participants' daily internet time was rather extensive. About half of the participants use the internet for 2-4 hours each day, and 26 of them use it for 4-6 hours per day. These student teachers' extensive participation in online reading

activities and extensive use of metacognitive online reading strategies may make sense given their familiarity with technology and the internet and the amount of time they spend online.

Dewi and Sahiruddin (2020) investigated the tertiary-level online reading strategies of EFL Indonesian learners. According to this study, the majority of students employ problem-solving strategies. For L2 learners, problem-solving was shown to be more helpful in enhancing text comprehension. In contrast to other research, the current study included an investigation of the preferences of students for reading—online vs. reading on paper—on the items among the online reading strategies utilized. It was found that both groups employed problem-solving strategies more frequently than the other two strategies. While item global strategies were the least utilized approach for readers who read on paper, readers who read online chose support strategies as their least-used strategy. As such, it may be concluded that both groups use different global reading strategies, problem-solving strategies, and support reading strategies in addition to having distinct reading preferences.

Before and during the Covid-19 Epidemic, Rianto (2021) concentrated on examining the usage of metacognitive online reading strategies which were related to learning environments. 244 EFL students from Indonesia studying English at Borneo Tarakan University made up the responses. The Online Survey of Reading Strategies was used to obtain the data (OSORS). According to the findings, support strategies were more commonly employed before the pandemic, whereas global strategies were less frequent. Support and problem-solving strategies predominated during the epidemic, but global strategies remained underutilized. Although the students' use of the overall and category strategies varied considerably, they did not use some of the particular strategies differently. Before the epidemic, the students used the strategies very moderately; after the pandemic, usage was at an all-time high. These findings suggest that for EFL students to comprehend what they read online, they must have metacognitive awareness.

The most effective metacognitive online academic reading strategies were examined by Saraswati (2021). 100 EFL students from the English education program at Walisongo State Islamic University participated in the research during the 2021 academic year. The Online Survey of Reading Strategies was used to collect data (OSORS). The study's findings showed that students' preferred method of problem-

solving was observation. Global reading strategies were the second most frequently employed, while support reading strategies were the last. The students used metacognitive online reading strategies to a great degree. They thought that employing metacognitive online reading strategies had benefitted them and that they were quite aware of it.

There have been fewer studies that explore digital reading habits in an EFL context and no studies that look at the possible impact it might have on online reading strategies. In particular, the usage of annotations and other forms of text interaction will be examined in a study by Vandenhoek (2013) as it relates to university students' reading preferences and habits in general. 630 students participated in an online survey, and the results were examined. The information exposes a number of conflicts in these students' preferences and routines and raises the possibility that there is a knowledge gap that can limit their capacity to interact with digital texts. The study's most notable finding is the preference for reading on paper, with 74% of respondents saying they prefer this method. Despite this obvious desire, few articles are printed by students in general. Less than 30% of the items that students read are printed, with more than 60% of them. The justifications for not printing are equally obvious, with 82% of students mentioning expense and 33% citing environmental concerns as the main deterrents. When asked whether an article is relevant for an assignment or a test, more students (77%) or (62%), respectively, said they would print it.

Akarsu and Daryemez (2014) investigated the present reading habits and attitudes of Atatürk University students studying English Language and Literature. There were 76 replies in all, with 23 males and 53 women responding. Every day, the great majority of participants spend 1 to 3 hours online. According to the findings of this study, students do not overstate their internet usage. Just 1.3% of those questioned spend more than 6 hours per day online. According to the data, although reading books and using the internet were the most popular activities among respondents, reading magazines was the least popular. Additionally, respondents stated that they read newspapers and emails on occasion. Finally, the overall findings revealed that university students studying English Language and Literature had formed a particular degree of reading habits. There has been an increase in the number of people who read internet material. This tendency, however, is not found in all literature available

to students online. Although most students read printed books, a significant portion of them never read novels online. The results of the study showed that pre-service teachers mostly used digital media every day and that psychological aspects related to reading (such as interest, anxiety, motivation, etc.) occasionally had an impact on the reading process while using digital media. It was found that people read digital media manuscripts for knowledge, amusement, and social interaction. Also, it was found that having a website and a social media account as well as using the Internet on a mobile device had an impact on readers' digital reading habits.

Research on DRH and gender revealed contradictory findings. According to Abidin et al. (2014), gender has no bearing on a person's preference for reading on a digital device. The results of Fatiloro et al. (2017) are corroborated by a recent study by Ramos et al. (2020), which asserted that gender differences do exist and that females have "better" digital reading habits than males.

Horton-Ramos (2020) investigated the e-reading habits of 109 graduate students in a more recent study. The cross-sectional study collected data using a 16-item questionnaire adapted by Maden (2018). According to the data analysis, respondents have "good e-reading habits" in general. Furthermore, it was discovered that there is a gender difference in the survey that favors female responders. In addition, there is a substantial inverse relationship between respondents' e-reading habits and age. According to the survey, respondents' socioeconomic level determines their e-reading preferences.

In a more recent study, Abequibel et al. (2021) sought to determine whether there is a gender difference in the respondents' digital reading habits and whether there is a substantial correlation between digital reading habits and socioeconomic position. Future reading instructors from the southern Philippines made up the study's respondents. The study modified Maden's questionnaire on digital reading habits (2018). The findings indicated that the respondents to this research had, on average, "acceptable" digital reading habits, indicating that they were doing so. According to a thorough study of the data, none of the respondents were found to have "bad" digital habits. This shows that the DRH of the male respondents in this research is considerably different from that of their female counterparts, with men having "better" DRH.

Summary

The theoretical framework has been defined, and relevant works are included in the literature review section. Research has revealed that online reading strategies can be affected by internal and external factors such as preferred mode of reading, reading habits, generational differences, and gender. However, the degree to which these factors affect online strategy use has not been explored, especially in the context of universities in Türkiye. Therefore, it was determined that a better understanding of learners' reading habits and preferences, their views regarding online reading, and their use of online reading strategies are needed and the present study focused on online reading strategies and digital reading habits.

3. METHODOLOGY

The methodology for the study is described in this chapter. Related hypotheses are created with the research question list. The specifics of the sample, the instruments used to collect the data, and the methodology are detailed along with the quantitative and qualitative approaches. There is extensive information provided regarding the instruments used to collect data. The data analysis methodologies utilized to investigate the study issues are summarized.

3.1. Research Design

This study was carried out to explore the online reading strategies employed by pre-service EFL students in Turkish universities. The factors related to participants' characteristics such as gender, years of study, and digital reading habits were examined to analyze and explain the possible differences in their online strategy use. To investigate them, a mixed-method research design was used.

The correlation between factors is studied using quantitative research (Creswell, 2009). Instruments measure the variables and offer numerical data for statistical analysis (Borrego et al., 2009). The quantitative method was based on two surveys. The first quantitative research tool included three parts: 13 questions for demographics, 16 questions for daily use, and 8 items for psychological dimension. 26 items total for digital reading habits were administered. The second tool had 38 questions regarding online strategy use. 18 of these items were related to global reading strategies, 11 of them to problem-solving strategies, and 9 items were related to support strategies. In total, the quantitative tools included 77 items.

Interviews with willing volunteers were done for the qualitative study, and semi-structured interview questions were used. As a general rule, data collection, and analysis procedures were based on triangulating the data. A mixed-methods study was conducted since a single research method would not be adequate to meet the objectives of the study.

3.1.1. Mixed-Methods Research

Research using mixed methodologies combines strategies from quantitative and qualitative perspectives and has been applied to study phenomena in the social sciences and educational fields (Creswell, 2015). A mixed methods study expands the examination through a variety of methodological facets by fusing the advantages of each research.

“The basic assumption is that the uses of both quantitative and qualitative methods, in combination, provide a better understanding of the research problem and question than either method by itself.” (Creswell, 2012, p. 535).

The use of mixed methods research enables researchers to integrate and combine many study design approaches in their investigations. It is possible to argue that using several, independent procedures will improve the validity and reliability of the study.

A survey design was utilized in the quantitative research of the current study, which is understood primarily as the use of questionnaires as data-gathering tools. Griffe (2012) outlined a few benefits of surveys. For instance, it is feasible to reach a broad participant base, allowing for in-depth justifications of a generic result. Additionally, it is beneficial to gather data more quickly so that it may be statistically examined using simple analytic strategies.

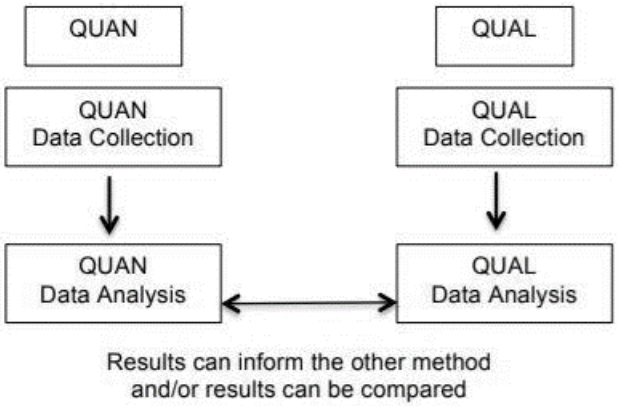
Nevertheless, there are several drawbacks to survey design. Griffe (2012) also covered the drawbacks, such as the fact that direct causation based on survey design was not always achieved. Additionally, Griffe (2012) argued that surveys could not capture all perspectives. He thus proposed combining several approaches to get over the drawbacks and triangulation. In addition, this study used a mixed-methods approach, including surveys and interviews. The interviews allowed for a deeper understanding of the sample's viewpoints. Interviews are the best instruments for a better understanding (Griffe, 2012).

A variety of methods to examine information gleaned from participants’ speech and other natural language expressions are referred to as qualitative research methods (Levitt et al., 2018). Even though it frequently comes from fewer sources than qualitative research, qualitative data offers extensive and contextualized information

(Levitt et al., 2018). To triangulate the data in that study, semi-structured interviews for open-ended responses were conducted.

Figure 1 shows how the triangulation was done (Creswell, 2009, p. 210).

Figure 1. Triangulation of the Data



Source: Creswell, 2009, p. 210

3.2. Participants

Non-probability sampling was utilized as the sampling technique. The researcher selects a sample based on the research goal, subject availability, or other non-statistical factors using this selection approach. Purposive sampling, a form of non-probability sampling approach, was utilized for the quantitative research. It is a nonrandom strategy that necessitates the purposeful selection of participants based on some expected characteristics (Etikan et al., 2016). The criterion for this research was to be a student in an ELT department at a Turkish university.In the qualitative research, both voluntary response and purposive sampling were employed. At the completion of the questionnaire, participants were asked whether they wanted to participate in the interview. Individuals who provided contact information for the interview portion were chosen.

Participants in this study were EFL students from several Turkish universities. To reach pre-service EFL students from several universities, the researcher used Google Forms, a solid, free, and user-friendly Google service. A Google account is all that is required to use the service. Using the built-in survey-making tools in the Google Forms environment simplifies the survey development process. Researchers may

collect participant responses using a variety of methods, including Likert scales, multiple-choice questions, and long written responses, using Google Forms. Google Forms also makes data processing easier. Google surveys not only collect names to safeguard participants' identities, but they also collect numerical responses in an Excel spreadsheet.

In total, 254 participants took part in the study. Four participants' responses were excluded from the data because they responded to only one part of the survey. Therefore, it was not possible to include their answers. As a result, responses from 250 participants were statistically analyzed.

Table 3. Demographic Characteristics of Participants in the Research

		N	**%**
Gender	Female	170	68,00%
	Male	80	32,00%
Age	18	16	6,4%
	19	33	13,2%
	20	59	23,6%
	21	60	24,0%
	22	53	21,2%
	23	17	6,8%
	24	5	2,0%
	25	4	1,6%
	30	1	0,4%
	36	1	0,4%
	46	1	0,4%

Grade Level	Freshmen	41	16,4%
	Sophomore	89	35,6%
	Junior	68	27,2%
	Senior	52	20,8%
Native Language	Turkish	240	96,0%
	English	2	0,8%
	Kurdish	2	0,8%
	Urdu	2	0,8%
	Kazakh	1	0,4%
	Russian	1	0,4%
	Dutch	1	0,4%
	Spanish	1	0,4%
Type of Institution	State	156	62,4%
	Private	94	37,6%

When demographic distribution was analyzed, it was seen that 68% of the participants were females, and 32% were males. Only 1.2% of the participants were 30 years and older. 16.4% of the participants were freshmen, 35.6% of the participants were sophomores, 27.2% of the participants were juniors and 20.8% of the participants were senior-year students. 96.6% of the participants were native Turkish speakers. 62.4% of the participants are currently studying at a state university, whereas 37.6% of the participants are pre-service EFL students at a private university.

Table 4. Background Information Related to Online Reading

		N	%
Preferred Mode of Reading	On paper	141	56,4%
	On screen	109	43,6%
Starting Age	0-6 years	41	16,4%
	Elementary School	130	52,0%
	Middle School	64	25,6%
	High School	15	6,0%
Hours Spent Online	0-1 hour	1	0,4%
	1-3 hours	38	15,2%
	3-5 hours	100	40,0%
	5+ hours	111	44,4%
Internet User Rate	Not competent	4	1,6%
	Slightly competent	11	4,4%
	Competent	53	21,2%
	Very competent	95	38,0%
	Highly competent	87	34,8%
Online Reading Time	Never	3	1,2%
	Rarely	19	7,6%
	Sometimes	75	30,0%
	Almost Everyday	50	20,0%

	Everyday	103	41,2%
Preferred Device	Laptop	114	45,6%
	Mobile phone	79	31,6%
	Desktop	55	22,0%
	Tablet	2	0,8%
The Purpose for Online Reading	Academic	69	27,6%
	Leisure	89	35,6%
	Daily Knowledge	92	36,8%
Online Reader Rate	Not competent	7	2,8%
	Slightly competent	21	8,4%
	Competent	81	32,4%
	Very competent	74	29,6%
	Highly competent	67	26,8%

When demographic distribution was analyzed, it was seen that 56.4% of the participants prefer reading on paper and 43.6% of them prefer reading on screen. 16.4% of the participants started to use the Internet before attending school, 52% of them started to use the Internet in elementary school, 25.6% of the participants started using the internet in middle school and 6% of them started using the internet in high school. 0.4% of the participants spend less than an hour online, 15.2% of the participants spend 1 to 3 hours every day, 40% of the participants spend between 3 and 5 hours every day and 44.4% of the participants spend more than 5 hours online.

When asked about how they would rate themselves as an internet user, only 1.6% of the participants chose “not competent”, whereas 38% and 34.8% of the participants chose “very competent” and “highly competent”, respectively.

41.2% of the participants read online every day, and 20% of the participants read online almost every day. The preferred device for reading online is a laptop, which makes up 45.6% of the results.

There is a very even distribution when it comes to reading purposes. 27.6% of the participants mostly read for academic purposes. 35.6% of the participants read for their enjoyment, and 36.8% of the participants mostly read to gather everyday knowledge.

When asked about how they would rate themselves as an online reader, only 2.8% of the participants chose “not competent”, 32.4% of the participants chose “competent” and 26.8% of the participants chose “highly competent”.

Seven voluntary participants were interviewed. The interviewees study EFL in different universities and they are from different grades. Their gender, preferred mode of reading, and how much time they spend online were also taken into consideration so that a better understanding can be achieved regarding their online strategy use.

3.3. Data Collection Instruments

This study used mixed methods research, which is a blend of quantitative and qualitative research methodologies. Two surveys were used to obtain quantitative data, and semi-structured interviews were used to offer detailed explanations to the related research questions.

3.3.1. Online Survey of Reading Strategies (OSORS) (Anderson, 2003)

To measure participants’ online metacognitive strategies, the Online Survey of Reading Strategies (OSORS) (Anderson, 2003) was used through Google Forms. OSORS is an adapted version of the Survey of Reading Strategies (SORS) (Sheorey and Mokhtari, 2001). SORS was designed to assess metacognitive reading strategies on print-based texts. Anderson (2003) kept common strategies and adapted them to online reading and he also added some new items.

It is a 5-point Likert Scale ranging from never (1) to always or almost always (5). The survey consists of three subcategories: global reading strategies (GLOB) (18

items), problem-solving strategies (PROB) (11 items), and support strategies (SUP) (9 items).

Cronbach's alpha for the entire OSORS was .92. The stated reliabilities for every subsection are as follows: Global Reading Strategies, .77; Problem-Solving Strategies, .64; and Support Strategies, .69. These findings support the conclusion that the OSORS is a trustworthy instrument to evaluate the metacognitive online reading strategies of L2 readers.

3.3.1.1. Internal Consistency Reliability Analysis of OSORS

The internal consistency coefficient was calculated to ensure the measuring tool's reliability. Cronbach's alpha internal consistency coefficients were used to calculate the variance for each item.

Table 5. Internal Consistency Reliability Analysis

Subscale	Number of Items	Cronbach's Alpha
OSORS	38	.920
Global Strategies	18	.882
Problem-Solving Strategies	11	.903
Support Strategies	9	.958

The analysis showed that Cronbach's Alpha (α= .920) value was reasonably reliable since it was greater than (α = .70) as recommended by Büyüköztürk (2016). As a result, the total of the scale showed an adequate level of reliability.

3.3.2. Digital Reading Habits Scale (Maden, 2018)

Maden (2018) created a Digital Reading Habits Scale based on previous scales in the literature (Şahenk Erkan et al., 2015; Maden & Maden, 2016) to evaluate the digital reading levels of pre-service Turkish language instructors and analyze the findings based on several variables. Scales relating to reading printed texts were assessed

throughout the scale construction process, and a 30-item pool for reading tasks performed in digital/electronic medium was created.

The expert opinions of Turkish education scholars (n = 5) and Turkish teachers (n = 6) were utilized to choose 27 questions with content validity. The draft scale was evaluated with 75 pre-service teachers in a pilot program, and the total internal consistency reliability coefficient was 0.89. When one item with an internal consistency coefficient less than 0.60 was deleted, the scale was reduced to 26 items. Factor analysis was used to assess the construct validity of the scale, and items with a factor load more than 0.40 were included in the scale. The scale has two components: reading psychology and daily use. These two variables were responsible for 67.85% of the entire variance. The factor loads were determined to range between 0.46 to 0.80 using factor analysis.

3.3.2.1. Internal Consistency Reliability Analysis of Digital Reading Habits Scale

The scale's internal consistency coefficient was found to ensure the reliability of the measurement tool. The internal consistency coefficients were calculated based on the variance of each factor are given in Table 6.

Table 6. Internal Consistency of Digital Reading Habits Scale

Scale	Number of Items	Cronbach's Alpha
Digital Reading Habits Scale	26	.891
Reading Psychology Dimension	8	.892
Daily Use Dimension	18	.891

This table shows that Cronbach's Alpha value of the overall scale was .891, which indicated a high level of reliability. As a result, the total of the scale and subscales gave an acceptable level of reliability.

3.4. Procedure for Data Collection

First, the universities with EFL departments were checked, and a list was created. The instruments were administered through Google Forms and the link was sent to chosen universities. At the beginning of the online survey, there was details about the researcher's background, the purpose of the study, and the survey process to seek their participation. There was additional information regarding the study's background and survey components. Participants were required to read the material and complete the consent form below in order to continue responding to the poll. After completing the permission form, they were requested to answer the demographic questions. Gender, age, years of study, when they started using the internet, how much time they spent online, their preferred reading method, reasons for online reading, which device they use to read online, and how they would rate themselves as an online reader were all asked in the participant background section.

An explanatory sequential design was used in the study. The quantitative data was obtained first, followed by the qualitative data. The data gathering tool was developed as an online survey and built on an online platform. The participants were provided the short link that had been produced. It was divided into three sections: 13 questions about demographics, 38 questions about OSORS, and 26 questions on digital reading habits. The survey has 77 items in total.

The data was collected during January and February of 2023. A demographic questionnaire, the Online Survey of Reading Strategies, the Digital Reading Habits Scale, and semi-structured interview questions were utilized to collect data.

3.5. Data Analysis

IBM SPSS 25.0 software was used to examine the quantitative data. Büyüköztürk (2016) highlighted three distinct techniques to be employed for the normality of data. These are skewness, mean, median, and mode values; studying graphics and the normality tests in SPSS. Furthermore, when the p-value is larger than ,05, the difference is significant, and the data has a normal distribution. Parametric tests were selected when the normal distribution was confirmed. The normality distribution was examined using Kurtosis-Skewness coefficient values. Normality tests were

performed to evaluate whether to employ parametric or non-parametric tests using the survey data.

1. The reliability of the data collection tools was examined.
2. Descriptive statistics were utilized to determine the participants' digital reading habits and online reading strategies.
3. Since the variables had a normal distribution, an independent t-test was utilized.
4. Pearson Correlation analysis was used to examine whether there was a significant relationship between online reading strategy use and digital reading habits.
5. Multiple regression analysis was applied to determine the effect of nline reading strategies and digital reading habits on each other.
6. The findings obtained were statistically significant at the $p<0.05$ level.

4. RESULTS

The results of the survey and interviews are reported in this chapter. The data overview includes demographic information about the participants, survey responses, and interviews. Both quantitative and qualitative data were given in the chapter.

The collected data were analyzed to answer the research questions:

1. What are the digital reading habits of pre-service EFL students in Türkiye?

2. Do their digital reading habits differ according to some independent variables (gender, years of study, type of institution, preferred mode of reading, and their perceived competence of reading online)?

3. What are the online reading strategies used by pre-service EFL students in Türkiye?

4. Does their online reading strategy use differ according to some independent variables (gender, years of study, type of institution, preferred mode of reading, and their perceived competence of reading online)?

5. Is there a relationship between the digital reading habits of pre-service EFL students and the online reading strategies they employ?

6. What are the views of pre-service EFL students regarding their online reading and online reading strategies?

4.1. Quantitative Data

The quantitative data were gathered via an electronic survey with 77 items. The participants responded with 13 questions about background information, 38 items for online reading strategies, and 26 items for digital reading habits. The Online Survey of Reading Strategies (Anderson, 2003) is a five-point Likert scale that inquires about participants' agreement with the statements. The Reading Habits Scale (Maden, 2018) was designed to understand the reading habits of pre-service teachers

in the digital era. The data were analyzed statistically, and all the tests were computed in the IBM SPSS program.

Table 7. Results of Normality Tests for the Distribution of Data

Variables	Mean	Median	Mode	Skewness	Kurtosis	Range	Min	Max
OSORS	3.4883	3.4474	3.24	-.347	1.129	4.00	1.00	5.00
GLOB	3.5184	3.5000	3.50	-.330	1.057	4.00	1.00	5.00
PROB	3.7313	3.8182	4.00	-.642	1.063	4.00	1.00	5.00
SUP	3.1311	3.1111	3.11	-.020	-.149	4.00	1.00	5.00
DRH	2.8613	2.8654	3.08	-.349	.971	3.00	1.00	4.00
RP	2.8291	2.8750	3.00	-.235	.253	3.00	1.00	4.00
DU	2.8758	2.8889	3.00	-.433	1.110	3.00	1.00	4.00

To demonstrate a normal univariate distribution, values for asymmetry and kurtosis between -2 and +2 are regarded as acceptable (George & Mallery, 2010). The normal distribution analysis revealed that these data did, in fact, match the normal distribution when the mean-median distance was close and the kurtosis and skewness requirements were between ±1.5 (Tabachnick & Fidell, 2007). The decision was made to use normal distribution analyses, and the proper parametric tests were computed (George, Mallery, 2010).

Research Question 1: What are the digital reading habits of pre-service EFL students in Türkiye?

Digital Reading Habits scale is a four-point Likert type scored by (4) always; (3) mostly; (2) seldom; and (1) never. Two negative items were reverse-coded.

Tablo 8. Scale Point Ranges

Options	Assigned Value	Value Range
Never	1	1.00 – 1.74

Seldom	2	1.75 – 2.49
Mostly	3	2.50 – 3.24
Always	4	3.25 – 4.00

Using descriptive statistics, the mean and standard deviation of the scale, the subscales and each item were analyzed. Table 9 shows the descriptive statistics for the whole scale and subscales, respectively.

Table 9. Digital Reading Habits Descriptive Statistics

	Mean	Std. Deviation
Digital Reading Habits Scale	2.8613	.39286
Daily Use	2.8758	.40051
Reading Psychology	2.8291	.50855

When the descriptive statistics were examined, it was revealed that the mean results for each subscale and the overall scale were between the 2.50-3.24 range. This means the pre-service EFL students mostly utilize digital reading in their daily lives and they have moderately positive views on reading in digital media.

When we look at the mean results of each item of the Reading Psychology Dimension in Table 10, we can see that 3 items had a mean score of 3 and higher. The item with the highest mean score was "I feel anxious when reading in digital media." (m = 3.27). Followed by the items "My reading comprehension skills are restricted when utilizing technologies for reading." (m = 3.14) and "I enjoy reading the content shared on digital media." (m = 3.00). The item with the lowest mean score was "I trust the content I read on digital devices." (m = 2.29)

Table 10. Reading Psychology Dimension

	Mean	**Std. Deviation**
Q1	2.85	.849
Q2	2.86	.855

Q3	3.27	.738
Q4	3.14	.714
Q5	2.53	.870
Q6	3.00	.736
Q7	2.29	.684
Q8	2.68	.856

Descriptive statistics were used to discover the mean scores of each item in the Daily Use Dimension of the Digital Reading Habits Scale. The results are shown in Table 11.

Table 11. Daily Use Dimension

	Mean	**Std. Deviation**
Q9	2.93	.864
Q10	3.24	.683
Q11	3.24	.750
Q12	3.26	.757
Q13	3.05	.870
Q14	2.41	.888
Q15	2.53	.906
Q16	3.32	.751
Q17	3.23	.713
Q18	2.65	.842
Q19	2.29	.868
Q20	2.85	.859

Q21	2.69	.821
Q22	2.92	.742
Q23	2.67	.799
Q24	3.09	.752
Q25	2.72	.778
Q26	2.66	.822

Out of 18 items in this dimension, the item with the lowest score was “I usually comment on and share the content during digital reading.” (m = 2.29), followed by the item “14. I prefer reading on screen instead of reading printed resources.” (m = 2.41).

The item with the highest score in this dimension was “I can use various electronic devices (computer, mobile phone, tablet, etc.) when reading.” (m = 3.32). The next items with the highest mean score was “I sometimes read in digital media for fun or chat with others.” (m = 3.26) and “I read in digital media whenever I need to.” (m = 3.24).

Research Question 2: Do their digital reading habits differ according to some independent variables (gender, preferred mode of reading, type of institution, years of study, and their perceived competence as an online reader)?

a) Gender

An independent sample t-test was used to see if the participants' digital reading habits differed based on their gender. The Levene's Test for Equality of Variances was not significant for subscales or the total scale (p >.05), suggesting that the assumption of equal variances was not violated. This implies that the Independent Samples Test findings from the first line in the output (equal variances assumed) may be provided. Table 12 displays the results.

Table 12. Gender Differences in Digital Reading Habits

	Gender	N	Mean	Sig	t	df	p
Reading Psychology	Female	170	2.7713	.887	-2.652	241	**.009***
	Male	80	2.9520				
Daily Use	Female	170	2.8892	.291	.773	241	.440
	Male	80	2.8472				
Digital Reading Habits	Female	170	2.8530	.683	-.490	241	.624
	Male	80	2.8791				

For the Reading Psychology Dimension, male participants recorded higher mean scores (m = 2.9520) than female participants (m = 2.7713). There was a statistically significant difference in scores for males and females as the p-value is less than 0.05 (p = .009). According to this result, male EFL students showed a more positive attitude regarding digital reading than female EFL students.

For Daily Use Dimension, female participants recorded higher mean scores (m = 2.8892) than male participants (m = 2.8472). However, this result is not statistically significant as the p-value is more than 0.05 (p = .440).

When we look at each item for the Reading Psychology dimension, it is possible to see two significant results. Male participants recorded higher mean scores for items "I am interested in reading in digital media (on-screen)." and "I feel comfortable when reading in digital media."

Table 13. Gender Differences in Reading Psychology Dimension

	Gender	N	Mean	Sig	t	df	p
Q1	Female	170	2.77	.085	-2.227	248	**.027***
	Male	80	3.03				
Q2	Female	170	2.76	.290	-2.763	248	**.06***

	Male	80	3.08

When we look at each item for the Daily Use dimension, it is possible to see five significant results.

Table 14. Gender Differences in Daily Use Dimension

	Gender	**N**	**Mean**	**Sig**	**t**	**df**	**p**
Q14	Female	170	2.27	.562	-3.654	248	**.000***
	Male	80	2.70				
Q15	Female	170	2.66	.019	3.291	248	**.001***
	Male	80	2.26				
Q16	Female	170	3.25	.587	-2.072	248	**.039***
	Male	80	3.46				
Q22	Female	170	2.99	.078	2.450	248	**.015***
	Male	80	2.75				
Q23	Female	170	2.76	.065	2.707	248	**.017***
	Male	80	2.48				

b) Preferred Mode of Reading (On paper vs. On screen)

An independent sample t-test was conducted to determine whether the participants' digital reading habits differed according to their preferred mode of reading. The Levene's Test for Equality of Variances was not significant for subscales or the total scale ($p > .05$), suggesting that the assumption of equal variances was not violated. This implies that the Independent Samples Test findings from the first line in the output (equal variances assumed) may be provided. The results can be seen in Table 15.

Tablo 15. Preference of Reading Modes and Digital Reading Habits

	Preference	N	Mean	Sig	t	df	p
Digital Reading Habits	On paper	141	2.7459	.628	-5.594	248	**.000***
	On screen	109	3.0106				
Daily Use	On paper	141	2.7939	.979	-3.771	248	**.000***
	On screen	109	2.9817				
Reading Psychology	On paper	141	2.6379	.489	-7.469	248	**.000***
	On screen	109	3.0765				

When we look at the results of the t-test, we can see that participants who prefer reading on screen had higher mean scores across all scales.

Participants who prefer reading on screen had higher mean scores (m = 2.9817) than those who prefer reading on paper (m = 2.7939) in the daily use dimension. This is a statistically significant difference as the p-value is less than .05. This reveals that those who prefer reading on screen integrate reading in digital media into their lives a lot more.

Participants whose preference is reading on screen had higher mean scores (m = 3.0765) than participants who prefer reading on paper (m = 2.6379). This is also a highly significant result (p = .000) which means they have a more positive attitude towards digital reading than those who like reading from print materials.

The overall scale results are similar as those who prefer reading on screen had higher mean scores (m = 3.0106) than those who prefer reading in the traditional mode (m = 2.7459).

c) Type of Institution

An independent sample t-test was conducted to determine whether the participants' digital reading habits differed according to the institution they attend. The Levene's Test for Equality of Variances was not significant for subscales or the total scale (p >.05), suggesting that the assumption of equal variances was not violated. This

implies that the Independent Samples Test findings from the first line in the output (equal variances assumed) may be provided. The results can be seen in Table 16.

Table 16. Type of Institution and Digital Reading Habits

	Type	N	Mean	Sig	t	df	p
Digital Reading Habits	State	156	2.8200	.924	-2.158	248	**.032***
	Private	94	2.9299				
Daily Use	State	156	2.8326	.845	-2.212	248	**.028***
	Private	94	2.9474				
Reading Psychology	State	156	2.7917	.916	-1.505	248	.134
	Private	94	2.8913				

Pre-service EFL students who are currently studying at a private institution had higher mean scores in the overall scale (m = 2.9299) and all of its subscales (m =2.9474 and m = 2.8913) than those whore are studying at a state university. However, this result is not significant for the reading psychology subscale as the p-value is higher than .05 (p = .134). The results are significant for the overall scale (p = .32), as well as the daily use subscale (p = .028).

d) Years of Study

A one-way ANOVA test was conducted to determine whether the participants' digital reading habits differed according to which grade level they are in. The results can be found in Table 17.

Table 17. The Years of Study and Digital Reading Habits

	Year	N	Mean	St. D.	F	p
Digital Reading Habits	1st Year	41	2.7814	.40952	1.622	0.185
	2nd Year	89	2.8493	.37382		

	3rd Year	68	2.8529	.35896		
	4th Year	52	2.9560	.44384		
Daily Use	1st Year	41	2.7873	.39286	1.705	0.167
	2nd Year	89	2.8558	.38927		
	3rd Year	68	2.8840	.39406		
	4th Year	52	2.9690	.37419		
Reading Psychology	1st Year	41	2.7683	.55591	1.039	.376
	2nd Year	89	2.8347	.47090		
	3rd Year	68	2.7831	.48322		
	4th Year	52	2.9279	.56139		

According to the one-way ANOVA test results, it was determined that the overall Digital Reading Habits Scale, the Reading Psychology Dimension, and the Daily Use Dimension scores did not display statistical significance according to years of study ($p > ,05$).

e) Perceived Competence as an Online Reader

A one-way ANOVA test was conducted to determine whether the participants' digital reading habits differed according to how they rate themselves as an online reader. The results can be found in Table 18.

Table 18. Perceived Competence and Digital Reading Habits

	Competence	**N**	**Mean**	**St. D.**	**p**
Digital Reading	Not Competent	7	2.1868	.47389	**.000***

	Slightly competent	21	2.6264	.29571	
	Competent	81	2.7518	.32558	
	Very competent	74	2.8994	.30337	
	Highly competent	67	3.0959	.40870	
Daily Use	Not competent	7	2.2778	.40445	**.000***
	Slightly competent	21	2.7302	.33485	
	Competent	81	2.7764	.36239	
	Very competent	74	2.9107	.31276	
	Highly competent	67	3.0655	.44074	
Reading Psychology	Not competent	7	1.9821	.70130	**.000***
	Slightly competent	21	2.3929	.42991	
	Competent	81	2.6958	.37278	
	Very competent	74	2.8757	.43242	
	Highly competent	67	3.1642	.47422	

The participants in the study rated themselves as an online reader, with answers varying from “not competent” to “highly competent”. ANOVA results showed that pre-service EFL students who perceive themselves to be good online readers had higher mean scores in the Digital Reading Habits scale and all of its subscales. This is a significant result as the p-values for all dimensions were less than 0.05. Thus, it is determined that participants who believe themselves to be good online readers employ online reading more and they have better and more positive opinions regarding reading in the digital era.

Research Question 3: What are the online reading strategies used by pre-service EFL students in Türkiye?

The OSORS survey has 38 questions, each of which falls into one of three categories: global strategies, problem-solving techniques, or support strategies. Each question could be answered with a number between one and five. The numbers, in accordance with Anderson (2003), support the following claims: "1" denotes that I never or hardly ever do this, and "2" denotes that I very rarely do this. "3" implies I occasionally (about 50% of the time) do this, and "4" means I typically do this. "5" indicates that I almost always or always do something.

According to Anderson's suggestion, the results of each survey should be compared using the following scale. This scale evaluates how well readers employ reading strategies:

- High use of strategy if the average is 3.5 or higher;
- Moderate use of strategy is the average is 2.5 to 3.4;
- Low use of strategy is the average is 2.4 or lower.

The scale displays the overall reading strategy use of the participants. Through descriptive statistics and frequency distributions, the findings of the quantitative data analysis provided answers to the first research topic and its sub-categories.

Table 19. Online Reading Subscales

	Mean	Std. Deviation
Global Strategies	3.5184	.58381

Problem-Solving Strategies	3.7313	.63243
Support Strategies	3.1311	.75494

As Table 19 indicates, the participants reported that they used problem-solving strategies the most (m = 3.7313), global strategies the second most (m = 3.5184), and support strategies the least (m = 3.1311). According to the results interpretation guidelines, an average higher than 3.5 indicates high use of strategy; averages between 2.5 and 3.4 indicate moderate use of strategy; and an average of 2.4 or lower indicates low use of strategy. The mean scores for global and problem-solving strategies indicate high usage, whereas the mean score for support strategies indicates moderate use among participants.

Table 20. Global Reading Strategies

	Mean	**S.D.**
1. I have a purpose in mind when I read online.	3.62	.976
2. I participate in live chat with other learners of English.	2.85	1.321
3. I participate in live chat with native speakers of English.	2.84	1.363
5. I think about what I know to help me understand what I read online.	3.63	1.038
6. I take an overall view of the online text to see what it is about before reading it.	3.56	1.097
8. I think about whether the content of the on-line text fits my reading purpose.	3.68	1.019
10. I review the online text first by noting its characteristics like length and organization.	3.40	1.165
14. When reading online, I decide what to read closely and what to ignore.	3.79	.952

17. I read pages on the Internet for academic purposes.	3.48	1.084
18. I use tables, figures, and pictures in the online text to increase my understanding.	3.39	1.147
20. I use context clues to help me better understand what I am reading online.	3.69	1.048
23. I use typographical features like bold face and italics to identify key information.	3.42	1.153
24. I critically analyze and evaluate the information presented in the online text.	3.42	.999
26. I check my understanding when I come across new information.	3.89	.932
27. I try to guess what the content of the online text is about when I read.	3.69	1.052
30. I check to see if my guesses about the online text are right or wrong.	3.49	1.073
32. I scan the online text to get a basic idea of whether it will serve my purposes before choosing to read it.	3.76	1.082
33. I read pages on the Internet for fun	3.74	1.083

The items with the highest mean score were “I check my understanding when I come across new information.” (m = 3.89), “When reading online, I decide what to read closely and what to ignore.” (m = 3.79), and “I scan the online text to get a basic idea of whether it will serve my purposes before choosing to read it.” (m = 3.76).

The items with the lowest mean scores were “I participate in live chat with native speakers of English.” (m = 2.84) and “I participate in live chat with other learners of English.” (m = 2.85).

Table 21. Problem-Solving Strategies

	Mean	**S.D.**
9. I read slowly and carefully to make sure I understand what I am reading online.	3.41	1.113
11. I try to get back on track when I lose concentration.	3.86	1.010
13. I adjust my reading speed according to what I am reading online.	3.79	1.086

16. When online text becomes difficult, I pay closer attention to what I am reading.	3.90	.995
19. I stop from time to time and think about what I am reading online.	3.53	1.068
22. I try to picture or visualize information to help remember what I read online	3.57	1.139
28. When online text becomes difficult, I re-read it to increase my understanding.	3.85	1.034
31. When I read online, I guess the meaning of unknown words or phrases.	3.87	.987
34. I critically evaluate the online text before choosing to use information I read online.	3.58	1.066
35. I can distinguish between fact and opinion in online texts.	3.98	.990
36. When reading online, I look for sites that cover both sides of an issue.	3.70	.994

The items with the highest mean score were “I can distinguish between fact and opinion in online texts.” (m = 3.98), and “When online text becomes difficult, I pay closer attention to what I am reading.” (m = 3.90), and “When I read online, I guess the meaning of unknown words or phrases.” (m = 3.87).

The items with the lowest mean scores were “I read slowly and carefully to make sure I understand what I am reading online.” (m = 3.41), and “I stop from time to time and think about what I am reading online.” (m = 3.53).

Table 22. Support Strategies

	Mean	**S.D.**
4. I take notes while reading online to help me understand what I read.	2.76	1.353
7. When online text becomes difficult, I read aloud to help me understand what I read.	3.22	1.316
12. I print out a hard copy of the online text then underline or circle information to help me remember it.	2.79	1.340

15. I use reference materials (e.g. an on-line dictionary) to help me understand what I read on-line.	3.38	1.244
21. I paraphrase (restate ideas in my own words) to better understand what I read online.	3.18	1.224
25. I go back and forth in the online text to find relationships among ideas in it.	3.43	1.096
29. I ask myself questions I like to have answered in the online text.	3.27	1.184
37. When reading online, I translate from English into my native language.	2.66	1.377
38. When reading online, I think about information in both English and my mother tongue.	3.48	1.230

The items with the highest mean score were “When reading online, I think about information in both English and my mother tongue.” (m = 3.48) and “I go back and forth in the online text to find relationships among ideas in it.” (m = 3.43).

The items with the lowest mean scores were “When reading online, I translate from English into my native language.” (m = 2.66) and “I take notes while reading online to help me understand what I read.” (m = 2.76).

Table 23 below shows all the strategies from the most used one to the least used along with information regarding the strategy type.

Table 23. Reported Strategies from the Most Used to the Least Used

Question	Category	Mean	S.D.
Q35	PROB	3.98	.990
Q16	PROB	3.90	.995
Q26	GLOB	3.89	.932
Q31	PROB	3.87	.987
Q11	PROB	3.86	1.010
Q28	PROB	3.85	1.034
Q13	PROB	3.79	1.086

Q14	GLOB	3.79	.952
Q32	GLOB	3.76	1.082
Q33	GLOB	3.74	1.083
Q36	PROB	3.70	.994
Q20	GLOB	3.69	1.048
Q27	GLOB	3.69	1.052
Q8	GLOB	3.68	1.019
Q5	GLOB	3.63	1.038
Q1	GLOB	3.62	.976
Q34	PROB	3.58	1.066
Q22	PROB	3.57	1.139
Q6	GLOB	3.56	1.097
Q19	PROB	3.53	1.068
Q30	GLOB	3.49	1.073
Q38	SUP	3.48	1.230
Q17	GLOB	3.48	1.084
Q25	SUP	3.43	1.096
Q23	GLOB	3.42	1.153
Q24	GLOB	3.42	.999
Q9	PROB	3.41	1.113
Q10	GLOB	3.40	1.165
Q18	GLOB	3.39	1.147
Q15	SUP	3.38	1.244
Q29	SUP	3.27	1.184
Q7	SUP	3.22	1.316

Q21	SUP	3.18	1.224
Q2	GLOB	2.85	1.321
Q3	GLOB	2.84	1.363
Q12	SUP	2.79	1.340
Q4	SUP	2.76	1.353
Q37	SUP	2.66	1.377

Of the ten most frequently used strategies, six are problem-solving strategies and four are global strategies. Of the ten least frequently used strategies, on the other hand, seven were support strategies while only three were global strategies.

On average, the participants reported using twenty of these strategies (52,6%) very often (the means are above 3.5). Of these twenty strategies, half of them were problem-solving strategies with only one problem-solving strategy having a mean score of 3.41 which indicates it is moderately used by participants.

Research Question 4: Does their online reading strategy use differ according to some independent variables (gender, preferred mode of reading, type of instutition, years of study, and their perceived competence as an online reader)?

a) Gender

An independent sample t-test was conducted to determine whether the participants' online reading strategies differed according to their genders. The Levene's Test for Equality of Variances was not significant for subscales and overall scale (p > ,05) indicating no violation of the assumption of equal variances. This means that the results from the first line in the output (equal variances assumed) for the Independent Samples Test can be reported. The results can be seen in Table 24.

Table 24. Gender Differences in Online Reading Strategies

	Gender	**N**	**Mean**	**Sig**	**t**	**df**	**p**
OSORS	Female	170	3.5424	.531	2.211	248	**.028***
	Male	80	3.3734				

GLOB	Female	170	3.5660	.774	1.888	248	.060
	Male	80	3.4174				
PROB	Female	170	3.7647	.519	1.220	248	.224
	Male	80	3.6602				
SUP	Female	170	3.2235	.221	2.862	248	**.005***
	Male	80	2.9347				

The mean score of the overall scale for female participants (m = 3.5424) is higher than the mean score of male participants (m = 3.3734). This result is statistically significant as the p-value (p = 0.028) is lower than 0.05. The result indicates that female pre-service EFL students make use of online reading strategies more than male pre-service EFL students.

The mean scores of female participants for the GLOB and PROB subscales are higher than the mean scores of male participants in the same subscales. However, these results are not significant as the p-values are higher than 0.05.

The mean scores of male participants for the SUP subscale (m = 2.9347) are lower than the mean scores of female participants for the same subscale (m = 3.2235) which indicates a statistically significant difference (p = 0.005). This result indicates that female pre-service EFL students utilize support strategies significantly more than male pre-service EFL students.

Table 25. Gender Differences for Items

	Gender	**N**	**Mean**	**Sig**	**t**	**df**	**p**
Q4	Female	170	2.89	.848	2.271	248	**.024***
	Male	80	2.48				
Q7	Female	170	3.46	.823	4.250	248	**.000***

	Male	80	2.73				
Q9	Female	170	3.51	.269	2.079	248	**.039***
	Male	80	3.20				
Q10	Female	170	3.52	.211	2.386	248	**.018***
	Male	80	3.15				
Q17	Female	170	3.62	.965	3.105	248	**.002***
	Male	80	3.18				
Q32	Female	170	3.85	.577	1.991	248	**.048***
	Male	80	3.56				

Six out of 38 items had significant differences for male and female participants as their p values were less than .05. For all of these items female students had higher mean scores than male students.

b) Preferred Mode of Reading (On paper vs. On screen)

An independent sample t-test was conducted to determine whether the participants' online reading strategies differed according to their preferred mode of reading. The Levene's Test for Equality of Variances was not significant for subscales and overall scale ($p > .05$) indicating no violation of the assumption of equal variances. This means that the results from the first line in the output (equal variances assumed) for the Independent Samples Test can be reported. The results can be seen in Table 26.

Table 26. Preference of Reading Modes and Digital Reading Habits

	Preference	**N**	**Mean**	**Sig**	**t**	**df**	**p**
OSORS	On paper	141	3.5271	.498	1.227	248	.221
	On screen	109	3.4382				
GLOB	On paper	141	3.5343	.569	.487	248	.627
	On screen	109	3.4980				

PROB	On paper	141	3.7556	.927	.692	248	.489
	On screen	109	3.6997				
SUP	On paper	141	3.2333	.375	2.458	248	**.015***
	On screen	109	2.9990				

When we look at the results of the t-test, we can see that participants who prefer reading on screen had higher mean scores across all scales. However, these scores for the overall scale, GLOB and PROB subscales are not significant as the p-value is higher than .05.

Participants who prefer reading on paper had higher mean scores (m = 3.2333) than those who prefer reading on screen (m = 2.9990) in the SUP subscale. This is a statistically significant difference as the p-value is less than .05 (p = .015). This reveals that those who prefer reading on paper are more likely to use support strategies while reading online.

c) Type of Institution

An independent sample t-test was conducted to determine whether the participants' online reading strategies differed according to the institution they attend. The Levene's Test for Equality of Variances was not significant for subscales and overall scale (p > .05) indicating no violation of the assumption of equal variances. This means that the results from the first line in the output (equal variances assumed) for the Independent Samples Test can be reported. The results can be seen in Table 27.

Table 27. Type of Institution and Online Reading Strategies

	Type	**N**	**Mean**	**Sig**	**t**	**df**	**p**
OSORS	State	156	3.5089	.749	.739	248	.461
	Private	94	3.4541				
GLOB	State	156	3.5627	.607	1.548	248	.123
	Private	94	3.4450				

PROB	State	156	3.7669	.147	1.148	248	.252
	Private	94	3.6721				
SUP	State	156	3.0862	.131	-1.213	248	.226
	Private	94	3.2057				

Pre-service EFL students who are currently studying at a private institution had higher mean scores in the SUP subscale, whereas those who study at private universities had higher mean scores in the overall scale, as well as, GLOB and PROB subscales. However, this result is not significant as the p-value is higher than .05 for the scale and its subscales.

d) Years of Study

A one-way ANOVA test was conducted to determine whether the participants' online reading strategies differed according to which grade level they are in. The results can be found in Table 28.

Table 28. The Years of Study and Online Reading Strategies

	Year	**N**	**Mean**	**St. D.**	**F**	**p**
OSORS	1st Year	41	3.3042	.59827	2.486	.061
	2nd Year	89	3.4571	.44584		
	3rd Year	68	3.5704	.63581		
	4th Year	52	3.5795	.61273		
GLOB	1st Year	41	3.3076	.61188	3.866	**.010***
	2nd Year	89	3.4569	.46877		
	3rd Year	68	3.6373	.62953		
	4th Year	52	3.6346	.62905		

PROB	1st Year	41	3.5854	.75543	.892	.446
	2nd Year	89	3.7467	.51489		
	3rd Year	68	3.7701	.69154		
	4th Year	52	3.7692	.63124		
SUP	1st Year	41	2.9539	.67494	1.290	.278
	2nd Year	89	3.1036	.65709		
	3rd Year	68	3.1928	.83405		
	4th Year	52	3.2372	.85049		

According to the one-way ANOVA test results, it was determined that overall scale, PROB and SUP subscale scores did not display statistical significance according to years of study ($p > .05$).

However, the mean scores of the participants for GLOB scale increased with their years of study. Pre-service EFL students in their 1st year had a mean score of 3.3076 which is significantly lower than those in their senior year ($m = 3.6346$) as the p-value is lower than .05 ($p = .010$).

e) Perceived Competence as an Online Reader

A one-way ANOVA test was conducted to determine whether the participants' online reading strategies differed according to how they rated themselves as an online reader. The results can be found in Table 29.

Table 29. Perceived Competence and Online Reading Habits

	Competence	**N**	**Mean**	**St. D.**	**p**
OSORS	Not competent	7	2.8553	.26360	**.002***
	Slightly competent	21	2.9569	.61053	
	Competent	81	3.5184	.52666	

	Very competent	74	3.4928	.46919	
	Highly competent	67	3.5614	.64819	
GLOB	Not competent	7	2.7778	.27217	**.001***
	Slightly competent	21	2.9646	.59798	
	Competent	81	3.4895	.54771	
	Very competent	74	3.5380	.49956	
	Highly competent	67	3.6188	.64239	
PROB	Not competent	7	3.0227	.04545	**.001***
	Slightly competent	21	3.1240	.74331	
	Competent	81	3.7461	.60417	
	Very competent	74	3.7321	.53935	
	Highly competent	67	3.8307	.68875	
SUP	Not competent	7	2.8056	.61111	.170

Slightly competent	21	2.7374	.59685
Competent	81	3.2977	.65762
Very competent	74	3.1099	.71486
Highly competent	67	3.1175	.85621

The participants in the study rated themselves as an online reader answers varying from "not competent" to "highly competent". ANOVA results showed that differences in perceived competence result in significant differences when it comes to which strategies pre-service EFL students employ. Participants who perceived themselves to be good online readers had higher mean scores in the overall scale, as well as GLOB and PROB subscales. This is a significant result as the p-values for them were less than 0.05. Overall, it is determined that participants who believe themselves to be good online readers employ online reading strategies more. Those who perceive themselves to be highly competent online readers use global and problem-solving strategies more than the participants who do not believe themselves to be competent. The difference in mean scores for the SUP subscale was not significant ($p = .170$).

Research Question 5: Is there a relationship between the digital reading habits of pre-service EFL students and the online reading strategies they employ?

Pearson correlation analysis was conducted to determine whether there was a relationship between pre-service EFL students' online reading strategies and their digital reading habits.

Table 30. Correlations Between Scales and Subscales

		DRH	DU	RP	OSORS	GLOB	PROB	SUP
DRH	**r**	1	.949**	.829**	**.423****	**.482****	**.428****	.161*
	p		.000	.000	.000	.000	.000	.011
DU	**r**	.949**	1	.611**	**.482****	**.529****	**.460****	.244**
	p	.000		.000	.000	.000	.000	.000
RP	**r**	.829**	.611**	1	**.208****	**.272****	**.261****	-.027
	p	.000	.000		.001	.000	.000	.672
OSORS	**r**	**.423****	**.482****	**.208****	1	.949**	.894**	.795**
	p	.000	.000	.001		.000	.000	.000
GLOB	**r**	**.482****	**.529****	**.272****	.949**	1	.823**	.627**
	p	.000	.000	.000	.000		.000	.000
PROB	**r**	**.428****	**.460****	**.261****	.894**	.823**	1	.545**
	p	.000	.000	.000	.000	.000		.000
SUP	**r**	**.161***	**.244****	-.027	.795**	.627**	.545**	1
	p	.011	.000	.672	.000	.000	.000	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Pearson correlation analysis was conducted to determine whether there was a relationship between online reading strategy use and digital reading habits.

The results of the correlation analysis revealed that there was a positive relationship between the participants' online reading strategies and their digital reading habits at a moderate level (r = .423). There is also a positive relationship between participants' use of GLOB and PROB and digital reading habits at moderate levels (r = .482 and r = .428). There is a low positive correlation between participants' use of SUP and digital reading habits (r = .161). These findings indicate that higher scores in digital reading habits result in higher use of metacognitive online reading strategies.

The correlation analysis showed that Daily Use Dimension and DRH (r = .949), Reading Psychology Dimension and DRH (r = .829), GLOB and OSORS (r = .949), PROB and OSORS (r = .894) and SUP and OSORS (r = .795) had a strong positive correlation.

The correlation analysis shows that Daily Use Dimension and GLOB (r = .529), Daily Use Dimension and PROB (r = .460), and Daily Use Dimension and OSORS (r = .482) had a moderate positive correlation. On the other hand, Daily Use Dimension and SUP (r = .244) had a low positive correlation. These findings indicate that higher levels of digital reading in daily life result in higher use of metacognitive online reading strategies.

The correlation analysis showed that Reading Psychology Dimension and OSORS (r = .208), Reading Psychology Dimension and GLOB (r= .272), and Reading Psychology Dimension and PROB (r = .261) had positive correlations at a low level which might indicate a better opinion regards digital reading results in better use of metacognitive online reading strategies. However, there is no correlation between the Reading Psychology Dimension and Support Strategies (r > .05) which means better online reading attitudes do not indicate higher use of support strategies.

The Effects of Digital Reading Habits on OSORS

The effects of the subscales of the Digital Reading Habits Scale on online reading strategies, which was the dependent variable, were examined with a multiple regression model to show which one is a better predictor of OSORS (Daily Use or Reading Psychology) and the results were shown below.

Tablo 31. The Variables Affecting OSORS

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.495[a]	.245	.239	.49587

a. Predictors: (Constant), ReadingPsychologyDimension, DailyUseDimension

SPSS started the analysis with zero variables and continued by adding the factors of the Digital Reading Habits scale one by one to the model, keeping those with significant effects in the model. This process continued until no variable could contribute significantly to the model.

Table 32. Regression Analysis Results

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.613	.233		6.937	.000
	DailyUseDimension	.805	.099	.567	8.118	.000
	ReadingPsychologyDimension	-.155	.078	-.139	-1.988	.048

a. Dependent Variable: OSORS

The Daily Use Dimension was a better predictor of OSORS than Reading Psychology Dimension. The standardized regression coefficient (beta) for Daily Use Dimension was .567, compared with -.139 for the Reading Psychology Dimension. Only the Daily Use Dimension was a significant unique predictor of OSORS ($p < .01$).

The model explained a total of 24.5% of the variance in OSORS scores (R square = .245).

The Effects of OSORS on Digital Reading Habits

The effects of the subscales of OSORS on Digital Reading Habits, which was the dependent variable, were examined with a multiple regression model in order to show which subscale (GLOB, PROB or SUP) was the better predictor for the results of Digital Reading Habits scale, and the results were shown below.

Table 33. The Variables Affection DRH

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.519[a]	.269	.260	.33792

a. Predictors: (Constant), SUP_Subscale, PROB_Subscale, GLOB_Subscale

SPSS started the analysis with zero variables and continued by adding the factors of the Digital Reading Habits scale one by one to the model, keeping those with significant effects in the model. This process continued until no variable could contribute significantly to the model.

Table 34. Regression Analysis Results

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.711	.136		12.606	.000
	GLOB_Subscale	.358	.070	.532	5.136	.000
	PROB_Subscale	.075	.060	.120	1.248	.213
	SUP_Subscale	-.124	.036	-.237	-3.386	.001

a. Dependent Variable: DigitalReadingHabitsScale

Both GLOB and SUP were predictors of the Digital Reading Habits Scale, whereas PROB subscale is not ($p > .01$). GLOB subscale was a better predictor of Digital Reading Habits than SUP. The standardized regression coefficient (beta) for GLOB was .532, compared with -.237 for SUP.

The model explained a total of 26.9% of the variance in DRH scores (R square = .269).

4.2. Qualitative Data

Research Question 6: What are the views of pre-service EFL students regarding their online reading and online reading strategies?

Thematic analysis was used to analyze the interviews. The researcher carefully documented and recorded all of the interviews. Recurrent theme codes were created. NVivo 15.1 Qualitative analysis software was utilized for the coding. To ensure the validity and reliability of the coding technique, a second coder, a subject-matter specialist, coded the transcripts without access to the first coder's notes. Personal information from the transcripts was omitted in order to publish the data while protecting the confidentiality of the interviewees. Themes were derived from the collection of replies after the interviews were evaluated for keywords, phrases, and structures.

The use of a qualitative research technique allows for a complete and diverse examination of the issues. As a consequence, semi-structured interview questions were utilized, with extra follow-up questions provided when suitable.

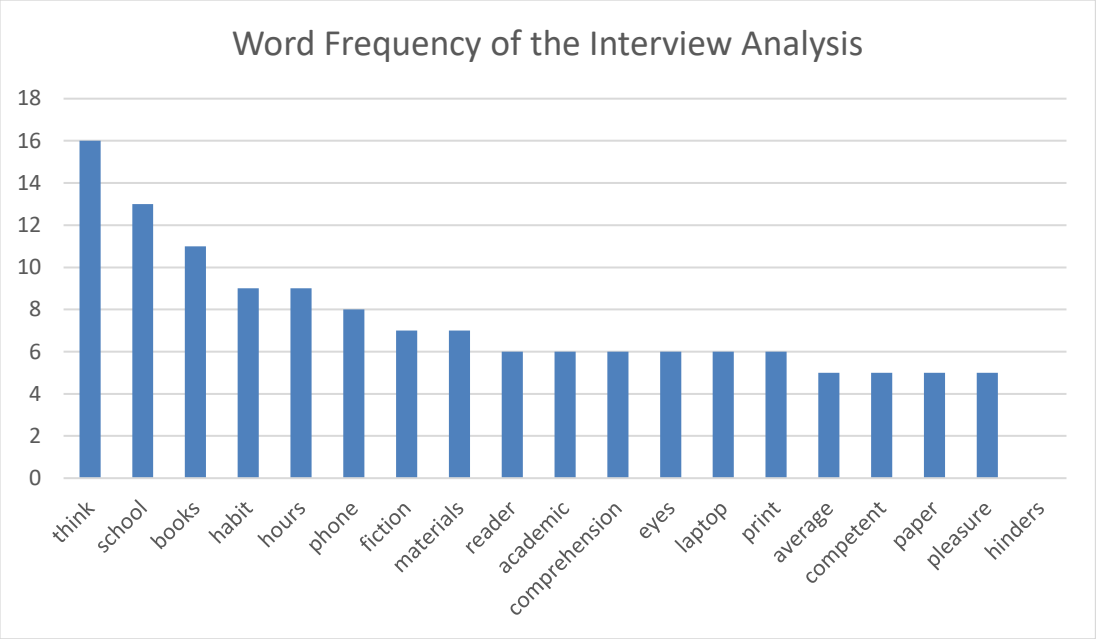
The first question was, “How would you describe your reading experience? Which type of reading texts do you prefer?”. This was a general question to have a better understanding of their reading background. Follow-up questions were asked regarding their age when they started to read online, and the devices they use while dealing with online texts.

The second, third, and fourth questions were, “Do you think online reading hinders or facilitates the habit of reading? “Do you think reading online versus printed materials has an impact on your comprehension of a text?” and “How similar or different do you think traditional and online reading is?”. In the current study, one of the aims was to make sure we understand which mode of reading is preferred by pre-service EFL students and the reason for their preference. Therefore, these questions were directed at them to elicit answers related to their understanding of online reading, which mode of texts they prefer, and why that might be the case for them.

The fifth and sixth ones, “On average, how much time do you spend on reading per day? (Paper-Based). How would you rate yourself as a traditional reader?” and “On average, how much time do you spend on reading per day? (Online Reading). How would you rate yourself as an online reader?” question set was directed. These questions were asked to have a better understanding of their reading background and how they perceive themselves as a reader in different modes.

As the final questions, interviewees were finally asked for their reasons for reading, the genres they favor, and the online reading strategies they employ with these texts. These items provided us with a better understanding of reading habits and the strategies used by pre-service EFL students and supported the claims of the quantitative data.

Figure 2. Word Frequency of the Interview Analysis



The main themes were "Reading Background, Drawbacks & Benefits of Online Reading and Online Reading Experience".

Table 35. Analysis of the Interviews

THEMES	CODES
Reading Background	*Digital devices (Phone, Laptop)*
	Preference for online texts
	Preference for print texts
	Weak reader
	Average reader
	Competent reader

Drawbacks & Benefits of Online Reading	*Physical challenges* *Visual challenges* *Distracting* *Hinders reading habit* *Laziness* *Misinformation* *Increases reading habit* *Resourceful* *Easy access/Efficient* *Cost-effective* *Less pressure* *No physical impact* *Comprehension issues*
Online Reading Experience	*Academic reading* *Pleasure reading* *Everyday knowledge* *Fiction* *Nonfiction* *Dictionaries* *Guessing* *Previewing* *Elementary school* *Middle school* *High school*

One of the major themes emerged as reading background. All of the interviewees mentioned the different devices they use to read online, their preferred mode of reading in the past and now, and how they view themselves as a reader in different contexts, as well as when they started reading online and how much time they spend on both print materials and online texts which might explain their reasons for preferences.

All of the respondents use their mobile phones and laptop for online reading. Three interviewees mentioned using them even before they started school, whereas the other four interviewees started to use digital devices when they were in middle school. As a result of this and the amount of time spent reading print and online texts, only one of the respondents believe themselves to be a weak online reader.

> **Interviewee 1:** *"I read online only when needed, such as a research work. So maybe 1 hour. I'm a weak online reader."*

One of the interviewees perceive themselves as a completely online focused reader.

> **Interviewee 6:** *"I used to read a lot in the past as a traditional reader so I would put myself incompetent, but I rarely read traditionally now. So, I can be considered a weak traditional reader. I read online for 3-4 hours a day. I'm highly competent. I dedicate a large portion of my day to reading online."*

From similar answers from other interviewees, it is easy to point out, pre-service EFL students associate the amount of time they spend reading online with how competent they are.

Four of the respondents prefer reading online texts to print texts. The main reason for this appears to be how accessible they are for two of the respondents. The fourth interviewee mentioned there is not a major difference between the two modes for them. The fifth interviewee, on the other hand, mentioned how reading online is more relaxing compared to print materials as they require more commitment.

> **Interviewee 4**: *"I prefer online texts but I don't think there are differences."*
>
> **Interviewee 5:** *"Print materials are good for homework or school work but I prefer online texts because when I have something physical in my hands I feel like I need to commit to finishing it but with online stuff I feel more free to read when I want to which takes away the pressure and makes me more willing."*
>
> **Interviewee 6:** *"I like online texts because they are easier to reach."*
>
> **Interviewee 7:** *"Obviously, I love to read printed books, but it is more convenient to read online because it is very difficult to buy them now. I think they are very different compared to time efficiency and cost. You can reach a*

book simply by typing the title, whereas you need to look at stores or libraries for traditional reading."

On the other hand, three interviewees mentioned an inclination to read print materials. They cited different reasons for such a preference.

Interviewee 1: "I prefer print materials because reading online hurts my head and eyes."

Interviewee 2: "I prefer print materials. Feeling the quality of the paper and the smell of it. The sound of the pencil's strokes on the paper... You can say that I'm just romanticizing it but it is what it is.."

Interviewee 3: "I like to have a piece of paper with me when studying, screens distract me."

The other theme was the drawbacks and benefits of online reading, and all of the interviewees had provided us with similar answers. Most of them still believe there are some disadvantages to online texts. Five interviewees mentioned physical and visual challenges that come with reading online.

Interviewee 1: *"I don't see any drawbacks in terms of comprehension, only physical ones such as headache or my eyes hurting. I prefer print materials because reading online hurts my head and eyes."*

Interviewee 3: *"Online reading makes my eyes hurt and it gives me a headache."*

Interviewee 4: *"It actually makes your eyes weak and since there are a lot of images and lights coming from your screen."*

Interviewee 6: "*Reading online strains your eyes."*

Interviewee 7: *"Since I wear glasses and my eyes are sensitive, using a phone/computer is really tiring for me."*

Interviewee 3 noted laziness and interviewee 6 mentioned the amount of misinformation online as a disadvantage of online reading. Four interviewees mentioned distraction as a drawback for online reading.

Interviewee 2: *"…There are also more distractors when it comes to online reading."*

Interviewee 3: *“I like to have a piece of paper with me when studying, screens distract me."*

Interviewee 5: *“Sometimes I get too lost in it that I forget to do other tasks like sleeping.”*

Interviewee 7: *"But it also creates a problem where you switch between books too fast.”*

Two interviewees mentioned the feel the need to touch the material for a better reading experience. Another high frequency answer was comprehension issues.

Interviewee 1: *"Printed materials make me understand more because I can take notes on it."*

Interviewee 2: *“If I read printed version, I can definitely say that my comprehension level goes higher according to those in the online version."*

Interviewee 3: *"Reading from a paper is much better when it comes to comprehension."*

Interviewee 5: *"I think i understand better when it comes to print materials."*

Interviewee 7: *“I would prefer reading on print if only they were cheaper because I understand better with print materials."*

The respondents mentioned the benefit of an increase in reading habits as a result of online reading. The amount of information that is accessible online is seen as an advantage by some participants, as well.

Interviewee 1: *“ Yes, it can facilitate the habit of reading for the people who don't like books… It provides you with fast access to a huge amount of information.”*

Interviewee 5: *“Online makes it more enjoable therefore it increases my will. Yes, it can increase the amount you read, especially in today's world.”*

Interviewee 6: *“I think it helps form a different habit of reading that is not desired by schools but still helpful for improving reading speed and brain development. You can experience different genres and styles without spending too much time shuffling books in the library or bookstore.”*

Interviewee 7: *"Being able to read whenever and wherever I want is an advantage for me. For the new generation, this is of course easier."*

Easy access to the world of reading is also another benefit that is mentioned by the respondents. A highly frequent answer was the cost-effective nature of online reading.

Interviewee 2: *"You don't have carry lots of book which can be physically demanding. It is cheaper than buying all those books."*

Interviewee 3: *"You save money because you don't spend it on books."*

Interviewee 4: *"Since books are expensive in Türkiye today, it actually help readers economically and in online."*

Interviewee 6: *"You can experience different genres and styles without spending too much time shuffling books in the library or bookstore with minimal cost."*

Interviewee 7: *"Obviously, I love to read printed books, but it is more convenient to read online because it is very difficult to buy them now."*

Lastly, online reading experience emerged as a theme. Four of the respondents mentioned starting to read online in high school. Six of the interviewees read for academic purposes mostly, with four of them also reading for pleasure, whereas, interviewees one, two and seven read for everyday knowledge. Out of these answers, we can see all of them prefer reading fiction regardless of the genre.

Interviewee 1: *"Academic reading. All kind of genres except poetry, so fiction, novels, academic texts, everyday knowledge."*

Interviewee 2: *"Academic reading, books that I can't afford, news. I like reading all of them. I don't really have a reading type but if I have to say something then it would be; poetry, fiction, novel, philosophy."*

Interviewee 3: *"I read for research reasons and for pleasure. Science fiction, fantasy, science facts."*

Interviewee 4: *"Reading for pleasure academic reading. Fiction, crime, nonfiction."*

Interviewee 5: *"Social media, sometimes academic reading, sometimes just books for pleasure. Fiction and nonfiction mostly, sometimes poetry."*

Interviewee 6: *"For pleasure and academic reading. I usually read comics, mangas, short books and forums. I also read some papers on my research and topics that I am interested in. Fiction, fantasy, horror, philosophy, science."*

Interviewee 7: *"I generally read for news . I generally like to read literary stuff but I also read fantasy fiction."*

When it comes to the question of online reading strategies, the interviewees mentioned three major strategies: Guessing the meaning from context, previewing the text and using dictionaires which supports the results of the quantitative analysis as the most frequently used strategies here are problem-solving strategies as well.

Interviewee 2: *"If I am reading online, most probably I am reading in English and as it's not my mother tongue, I try to guess the meaning and use dictionaries. "*

Interviewee 4: *"While reading online, I use guessing meaning and previewing the text."*

Interviewee 5: *"I preview the text and guess meanings almost everytime, I don't use dictionaries unless I really need it to understand."*

Interviewee 6: *"I usually guess meaning based from text or other people's interpretations in the forums."*

Interviewee 7: *"Actually, it's mostly fun trying to guess the meaning, but sometimes I come across things that make it almost impossible to guess. In such cases, I use small searches and a dictionary."*

To conclude, the findings of the quantitative analysis indicated positive attitudes towards online reading, with a slight inclination to print materials and moderate use of online reading, as well as, online reading strategies. Problem-solving strategies were the most favored strategies by pre-service EFL students and a positive correlation was found between the variables. In the qualitative findings, the interviewees' general attitude towards online reading was positive, their views included both advantages and disadvantages for this mode of reading, which was in

parallel with the quantitative result. The interviews also explained why there is some hesitance regarding online texts and how pre-service EFL students view online reading and reading strategies.

Summary

This chapter presents the analysis that was done on the survey and interview data. Tables and visuals were used to display the results. The examination of the data was used to address each study topic. Research questions one, two, three, four, and five were addressed using quantitative data, whereas research question six was examined using qualitative data. In the "Discussion" chapter, the findings were addressed and compared to the body of literature.

5. DISCUSSION

The preceding chapters discussed the need of examining pre-service EFL students' online reading habits and tactics as well as the necessity for a literature review in this area. The methodology of the current study is explained in full, including information on participants, data gathering methods, and data analysis. The preceding chapter presents the findings and data. This chapter provides an overview of each study question's results and contrasts them with earlier studies that were mentioned in the literature review. In order to make the comparison between the current study and earlier research significant, the interpretation of the results is also given. The tables and numerical data from the preceding chapter are not included in this part.

5.1. Research Question 1:

This study found out that the digital reading habits of pre-service EFL students were at a moderate level. It can be claimed that they have a mostly satisfying digital reading experience, however, there are some areas that need to be improved. Akarsu and Darıyemez (2014), Horton-Ramos (2020), and Abequibel et al. (2021) also had similar results. It appears that pre-service EFL students have not yet internalized reading on screen due to the fear that their comprehension might be affected even though they enjoy it most of the time and use it frequently in their daily lives, as well as academic settings.

We can observe that pre-service EFL students engage in digital reading whenever they need to for different purposes, including to get information or to have fun. While doing so, they can use various electronic devices as well. They perceive themselves to be more active when they need to use digital devices/screens in classes as they pay attention to different resources (dictionary, comments), visuals, and sounds (photograph, video, links, etc.) when reading in digital media. In spite all of these positive responses, participants still maintain that they prefer reading printed

resources instead of reading on screen which is in line with Vandenhoek (2013). This can be explained easily by their answers in the reading psychology dimension. Despite the fact that pre-service EFL students are interested in digital reading and enjoy it at a moderate level, they indicated that they do not trust the content they read on digital devices. Moreover, they feel anxious when reading in digital media and they assert that utilizing technologies for reading restricts their comprehension skills.

5.2. Research Question 2:

Overall, a significant difference was not found in the digital reading habits of pre-service EFL students when it comes to gender. This is in line with Abidin et al. (2014) who claimed that gender has no bearing on a person's preference for reading on a digital device. However, the results are in contrast with Ramos et al. (2020), which asserted that gender differences do exist and that females have better digital reading habits than males. In the current study, a statistically significant difference was observed in the reading psychology of the participants as male students had a more positive attitude towards reading on screen compared to female participants. This was even more evident when we checked the difference at an item level. Male pre-service EFL students are more interested in reading in digital media (on-screen) and they feel more comfortable when reading in digital media. This is similar to Abequibel et al. (2021) who found out the DRH of the male respondents in their research is considerably different from that of their female counterparts, with men having "better" DRH.

There were some noticeable differences observed in daily use dimension at an item level as well. Male students scored higher on items such as "I prefer reading on screen instead of reading printed resources" and "I can use various electronic devices". It can be claimed that they are more open to reading online and have more readiness to integrate electronic devices into their reading experience.

On the other hand, female pre-service EFL students scored higher on items such as "I rush to read the text as soon as possible when reading on the screen", "I spend my spare time by reading and chatting on the mobile phone" and "Even though I read digital resources, I always check printed resources when available". This indicates that although female students enjoy online reading to some extent, there appears to be resistance regarding reading on screen.

In the literature, digital reading habits and the factors that might play into them have not been explored. Thus, the other components of this research question are novel in this area of research. As expected, there is a highly significant difference when it comes to digital reading habits of pre-service EFL students in terms of their preferred mode of reading. Participants who prefer reading on screen to reading on paper participate in online reading more frequently. They are motivated when it comes to reading in digital media and they show positive attitudes towards online reading. This implicates that students who do not enjoy reading on screen might struggle and feel that their comprehension is restricted when faced with the task of online reading.

Although pre-service EFL students who study at a private institution have only slightly more positive attitudes toward digital reading, they still appear to have better digital reading habits. This can be explained by the fact that they have more access to electronic devices in their daily lives and academic settings which allows them to participate in online tasks more often. Despite this, they have similar concerns regarding reading on screen as students who study at a state institution.

The results of the study also indicate that pre-service EFL students' grade level does not dictate their habits when it comes to digital reading. This can be explained by the fact that, in this study, students were very close in terms of their age so the differences were not statistically significant. In addition to that, students' perceived online reading competence was measured which was highly significant on the account of their digital reading habits. Since the higher they rated themselves the better digital reading habits they showcased, the results indicate that pre-service EFL students who perceive themselves to be good online readers utilize online reading more than those who do not and they have more positive views regarding on-screen reading.

5.3. Research Question 3:

The results show that the participants use problem-solving strategies the most, followed by global strategies. This is supported by Anderson (2003), Omar (2014), Ahmadian and Pasand (2017), Öztürk (2018), Dewi and Sahiruddin (2020), and Saraswati (2021). They use support strategies the least and according to the results interpretation guidelines, pre-service EFL students' use of problem-solving and global strategies is high, whereas, they use support strategies at a moderate level.

When compared with Anderson (2003), the most and the least used strategies appear slightly different at an item level. However, the rate of each type of online reading strategy in the top and bottom twelve is quite similar. It is essential to remember that there are a total of eleven PROB, nine SUP, and eighteen GLOB in the OSORS. In the study of Anderson (2003), eight of the top 12 strategies (67%) are PROB. In the present study, seven of the top twelve strategies (58%) are PROB.

Table 36. Comparison with Anderson (2003)

Top Twelve Reading Strategies (Anderson, 2003)	**Top Twelve Reading Strategies in the Present Study**
1. I try to get back on track when I lose concentration. (PROB)	I can distinguish between fact and opinion in on-line texts. (PROB)
2. When on-line text becomes difficult, I re-read it to increase my understanding. (PROB)	When on-line text becomes difficult, I pay closer attention to what I am reading. (PROB)
3. When on-line text becomes difficult, I pay closer attention to what I am reading. (PROB)	I check my understanding when I come across new information. (GLOB)
4. I read slowly and carefully to make sure I understand what I am reading on-line. (PROB)	When I read on-line, I guess the meaning of unknown words or phrases. (PROB)
5. When I read on-line, I guess the meaning of unknown words or phrases. (PROB)	I try to get back on track when I lose concentration. (PROB)
6. I try to guess what the content of the on-line text is about when I read. (GLOB)	When on-line text becomes difficult, I re-read it to increase my understanding. (PROB)
7. I think about what I know to help me understand what I read on-line. (GLOB)	I adjust my reading speed according to what I am reading on-line. (PROB)
8. I can distinguish between fact and opinion in on-line texts. (GLOB)	When reading on-line, I decide what to read closely and what to ignore. (GLOB)

9. I try to picture or visualize information to help remember what I read on-line. (GLOB)	I scan the on-line text to get a basic idea of whether it will serve my purposes before choosing to read it. (GLOB)
10. When reading on-line, I decide what to read closely and what to ignore. (GLOB)	I read pages on the Internet for fun. (GLOB)
11. I adjust my reading speed according to what I am reading on-line. (PROB)	When reading on-line, I look for sites that cover both sides of an issue. (PROB)
12. I scan the on-line text to get a basic idea of whether it will serve my purposes before choosing to read it. (GLOB)	I use context clues to help me better understand what I am reading on-line. (GLOB)

Anderson (2003) also reported that seven of the bottom twelve strategies (58%) are SUP. There are also seven SUP in the bottom twelve strategies of the present study.

Tablo 37. Comparison with Anderson (2003)

Bottom Twelve Reading Strategies (Anderson, 2003)	**Bottom Twelve Reading Strategies in the Present Study**
27. When reading on-line, I think about information in both English and my mother tongue. (SUP)	I read slowly and carefully to make sure I understand what I am reading on-line. (PROB)
28. I stop from time to time and think about what I am reading on-line. (PROB)	I review the on-line text first by noting its characteristics like length and organization. (GLOB)
29. I review the on-line text first by noting its characteristics like length and organization. (GLOB)	I use tables, figures, and pictures in the on-line text to increase my understanding. (GLOB)
30. I ask myself questions I like to have answered in the on-line text. (SUP)	I use reference materials (e.g. an on-line dictionary) to help me understand what I read online. (SUP)
31. I use reference materials (e.g. an on-line dictionary) to help me understand	I ask myself questions I like to have answered in the on-line text. (SUP)

what I read on-line. (SUP)	
32. I use typographical features like bold face and italics to identify key information. (GLOB)	When on-line text becomes difficult, I read aloud to help me understand what I read. (SUP)
33. When on-line text becomes difficult, I read aloud to help me understand what I read. (SUP)	I paraphrase (restate ideas in my own words) to better understand what I read on-line. (SUP)
34. I print out a hard copy of the on-line text then underline or circle information to help me remember it. (SUP)	I participate in live chat with other learners of English. (GLOB)
35. When reading on-line, I translate from English into my native language. (SUP)	I participate in live chat with native speakers of English. (GLOB)
36. I take notes while reading on-line to help me understand what I read. (SUP)	I print out a hard copy of the on-line text then underline or circle information to help me remember it. (SUP)
37. I participate in live chat with native speakers of English. (GLOB)	I take notes while reading on-line to help me understand what I read. (SUP)
38. I participate in live chat with other learners of English. (GLOB)	When reading on-line, I translate from English into my native language. (SUP)

Pre-service EFL students' global strategy use is at a high level as ten out of eighteen global strategies were high in use and there was no low use of strategy. The global strategies that are highly in use are "I have a purpose in mind when I read online", "I think about what I know to help me understand what I read online", "I take an overall view of the online text to see what it is about before reading it", "I think about whether the content of the on-line text fits my reading purpose", "When reading online, I decide what to read closely and what to ignore", "I use online context clues to help me better understand what I am reading online", "I check my understanding when I come across new information", "I try to guess what the content of the online text is about when I read.", "I scan the online text to get a basic idea of whether it

will serve my purposes before choosing to read it." and "I read pages on the Internet for fun". These findings indicate that pre-service EFL students have autonomy, they are aware of their purpose and the means to achieve that purpose and they are able to monitor their reading process and comprehension. The least used GLOB items were related to participating in live chat with learners/native speakers of English which indicates students' reluctance to communicate their ideas related to online texts, or participating in the tasks which require interaction when it comes to online reading.

Pre-service EFL students' problem solving strategy use is at a high level as ten out of eleven problem-solving strategies were high in use and there was no low use of strategy found. The only moderate use of strategy was the item "I read slowly and carefully to make sure I understand what I am reading online". This can be explained by the age of the participants, as Gen Z-ers have a much shorter attention span than millennials and they are used to media content presented to them at a much more rapid pace. On the other hand, "When online text becomes difficult, I pay closer attention to what I am reading", "I try to get back on track when I lose concentration", "When online text becomes difficult, I re-read it to increase my understanding" and "I stop from time to time and think about what I am reading online" are strategies with high usage which indicates that pre-service EFL students choose to focus/slow down only when they find it necessary.

All support strategies were of moderate use. The strategy with the lowest average was "When reading online, I translate from English into my native language." and the support strategy with the highest mean score was "When reading online, I think about information in both English and my mother tongue". These are expected results as the participants of the study have been studying English for a long time and their levels are quite high. As a result of that, they mostly utilize problem solving and global strategies, as opposed to support strategies and they think in both languages instead of feeling the need to translate.

5.4. Research Question 4:

Overall, a significant difference was found for the online reading strategies of pre-service EFL students when it comes to gender as female participants reported higher use of online reading strategies. A statistically significant difference was observed in the SUP subscale, as female pre-service EFL students had a higher mean score for

this category of metacognitive online reading strategies. This contradicts Taki and Soleimani (2012) who found no difference in strategy use in terms of gender.

There were some noticeable differences observed in the OSORS at an item level when we took gender into consideration. Female students scored higher on items such as “I take notes while reading on-line to help me understand what I read”, “When online text becomes difficult, I read aloud to help me understand what I read”, “I read slowly and carefully to make sure I understand what I am reading online”, “I review the online text first by noting its characteristics like length and organization”, “I read pages on the Internet for academic purposes” and “I scan the online text to get a basic idea of whether it will serve my purposes before choosing to read it”. This indicates that.

The preferred mode of reading, type of school, years of study and perceive online reading competence and their influences on online reading strategies were original findings of the study. When we look at the results, there is no significant difference for the OSORS in terms of their preferred mode of reading. The only significant difference is for the SUP category, as participants who prefer to read on paper had higher use of support strategies. Despite the fact that students at a private institution have better access to digital devices and read online more than students at a state institution, there was no signficant difference for the online reading strategy.

The results of the study also indicate that pre-service EFL students’ grade level has an impact on the use of global reading strategies. Pre-service teachers who are a senior performed significantly higher than those in years below. This can be explained by the fact that, as they progress in their studies, they start to utilize higher level strategies more in order to maximize their performance and feel less need to use support strategies. This is supported in the literature.

In addition to that, students’ perceived online reading competence was measured which was highly significant on the account of their online reading strategies. The more competent they perceived themselves to be, the more strategies they used while reading online. This is especially true for GLOB and PROB subscales, whereas, the use of SUP did not change significantly in terms of perceived competence.

5.5. Research Question 5:

This question aimed to identify the correlation between digital reading habits and online reading strategies. This has not been explored in the literature previously. The correlational design showed that they had a positive correlation at a moderate level which means the better digital reading habits a student has, the more use of online reading strategies occur. This implication can be further proved by the moderate positive relationship between the daily use dimension and overall online strategy, as well as global and problem solving strategy use. There is also a low positive correlation between the daily use dimension and support strategy use. On the other hand, reading psychology had a low positive correlation with general online strategy use, global and problem strategy use, whereas it did not have a relationship with support strategies. This indicates a more positive outlook on digital reading might result in higher use of global and problem solving strategies, however, it cannot account for an increase in support strategies. This is also supported by the regression analysis, as the daily use dimension explained a total of 24.5% of the variance in OSORS scores. The correlational design also showed that there is strong positive correlation between the subscales: an increase in the use of on-screen reading or better views regarding digital reading causes an increase in overall digital reading habits. The more a pre-service EFL student uses GLOB, PROB and SUP, the higher their use of metacognitive online reading strategies as well.

5.6. Research Question 6:

The last research question addressed the views of pre-service EFL students regarding their online strategy use. The analysis of the interviews provided a deeper understanding of the participants' online reading experience. They all mentioned using their mobile phones and personal computers while reading online. All of the interviewees started using these devices before starting high school. With that being said, only one of them believes themselves to be a weak online reader, whereas the other interviewees hold the belief that they are competent in this area. From their answers, it is easy to point out that pre-service EFL students associate the amount of time they spend reading online with how competent they are as an online reader as the only respondent who believes they are a weak online reader, only reads for academic research and nothing else.

Despite the fact that, six of the seven interviewees are of the opinion that they are competent online readers, only four of them actually prefer online texts to print texts. The respondents who prefer reading print materials explained it with different reasons which include health effects such as headache and eyestrain induced by electronic devices, distraction caused by screens, and the need to feel the paper while reading. The reasons for online texts include how accessible they are and how reading online is more relaxing.

Both challenges and rewards could be identified in their perspectives. Most of them believe there are some disadvantages to online reading. Almost all of the interviewees mentioned physical and visual challenges such as headache and eyestrain. Other pre-service EFL students mentioned laziness, misinformation online and distraction. Another frequent answer was comprehension related issues caused by reading online. In spite of all these drawbacks, the interviewees mentioned the benefit of an increase in reading habits. The cost-effective nature of online reading, easy access to reading materials were seen as advantages as well.

The analysis of the interviews shows that, in terms of online reading, there is a preference for fiction regardless of the genre. Six of the seven interviewees read mostly for academic purposes, however, some of them read for everyday knowledge and for pleasure as well. While reading their preferred online texts, all of them mentioned using strategies. Three major strategies were identified: guessing the meaning from context, previewing the text, and using dictionaries.

6. CONCLUSION

The purpose of this study was to explore the online reading strategies used by pre-service EFL students. The current study also suggested that these strategies are chosen by the user due to their digital reading habits which include both their reading psychology and their daily use. Their strategy use was also suggested to be influenced by various factors in parallel with the previous research such as their gender, years of study, type of institution, the preferred mode of reading, and their perceived competence of reading online.

This study analyzed the online reading strategies and digital reading habits of pre-service EFL students and questioned the relationship between these two variables. Moreover, the influences of factors such as gender, years of study, type of institution, preferred mode of reading, and their perceived competence of reading online on both these concepts were examined. Without directly asking about their views and reflections on their online reading experience, the quantitative study might not have had a broader explanation for the findings; therefore, interviews were conducted to investigate the perceptions of pre-service EFL students in terms of their online reading habits and their strategy use. Using the mixed methods research approach, the obtained data were statistically and thematically validated. To create meaningful conclusions, the findings were discussed and compared to the literature. Several similarities and differences were discovered, and the likely causes of those outcomes were investigated.

As the target participants, pre-service EFL students studying at universities in Türkiye were chosen, as they are all familiar with online reading, and have a higher awareness of the strategies they employ. These participants also experienced fully online courses for over a year during the pandemic, so whether they preferred it or not, they engaged in online reading tasks quite often.

The results of the digital reading habits analysis showed that pre-service EFL students read online often and they have moderately positive views regarding online reading. However, more than 50% of the participants still prefer reading on paper.

This is explained on an item level and supported by the answers in the interview. Despite the fact that the participants enjoy reading online and spend hours doing it, they still have high levels of anxiety, especially since they believe their reading comprehension skills are restricted due to several factors such as laziness, physical challenges, and distractions online. On a subscale level, male EFL students showed a more positive attitude regarding digital reading than female EFL students. On an item level, male participants had higher scores for items such as “I am interested on-screen” and “I feel more comfortable reading in digital media”. Participants who are currently attending private institutions had better digital reading habits and they scored higher in terms of daily use. Their year of study did not influence their digital reading habits. The participants who rated themselves as competent online readers had better digital reading habits, as well.

The results of the study indicate that participants use problem-solving strategies the most, followed by global reading strategies and both of these strategies had a high rate of use. Of the ten most frequently used strategies, six are problem-solving strategies and four are global strategies. Of the ten least frequently used strategies, on the other hand, seven were support strategies while only three were global strategies. The analysis of the interview also supported the quantitative results, as interviewees used problem-solving strategies more often. The results also show that female pre-service EFL students use online reading strategies, in particular support strategies, more than male pre-service EFL students. Another interesting result is that preference in terms of reading mode did not influence the frequency of strategy use. However, the participants who prefer reading on paper are more likely to use support strategies while reading online. The type of institution of the participants did not have an impact on their online reading strategies. The strategies used by the participants increased with their years of study, but the most significant difference was found in their use of global strategies as seniors used them more often in comparison to freshmen students. The participants who perceive themselves to be good online readers use online strategies, especially problem-solving and global reading strategies, more often.

The current study also aimed to find out whether there was a relationship between online reading habits and online reading strategies of pre-service EFL students. The results revealed that there was a positive relationship between the participants' online

reading strategies and their digital reading habits at a moderate level. There were also positive correlations found between different types of online reading strategies and reading habits, as well. These findings indicate that higher scores in digital reading habits result in higher use of metacognitive online reading strategies.

Implications

When current conditions and technological advances are taken into account, it is believed that online education, or at least certain components of it, will always be a part of language learning. When the significance of online reading is acknowledged in this process, it can be argued that a better understanding of strategies utilized during online reading plays a key part in achieving greater quality in language education. Improving the quality of language education is the major objective of English instructors, and reading is one of the most significant role players in that process. As language teachers, we must support learners by paying attention to their needs and expectations.

Therefore, the pre-service EFL students, who engage heavily with online reading texts and are highly aware of the metacognitive reading strategies they employ during online reading, their perspectives and experiences should not be ignored. They often read online for several purposes, they use metacognitive online reading strategies frequently and they enjoy reading on screen. However, there are several reasons why the majority of pre-service EFL students in Türkiye still prefer reading on-paper. These concerns and the strategies they use while tackling online texts should be taken into consideration while preparing online reading tasks for language learners at all levels. If their experiences and concerns are ignored, achieving total success in online reading which is getting more widespread, and thus learning a language will not be possible.

Limitations of the Study

The current study featured a rather small group of target participants as compared to the overall number of pre-service EFL students in Turkish institutions. The participants were simply asked to rate their own proficiency as online readers; their ability to read online was not measured. Hence, it is impossible to say whether or not

their use of online reading strategies has an impact on how well they understand what they read online.

Recommendations for Future Research

Online reading habits, as well as online reading strategies, are areas that have not been explored, especially in Türkiye. Further research can be conducted with a larger number of participants. This study was conducted with pre-service EFL students. Future research can be carried out with students from different levels of education and different proficiency levels. Also, pre-test and post-tests can be used to examine whether the strategy use has an impact on online reading comprehension. Moreover, other language skills can be explored in the context of online tasks.

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APPENDICES

Appendice A: Online Survey of Reading Strategies (OSORS)

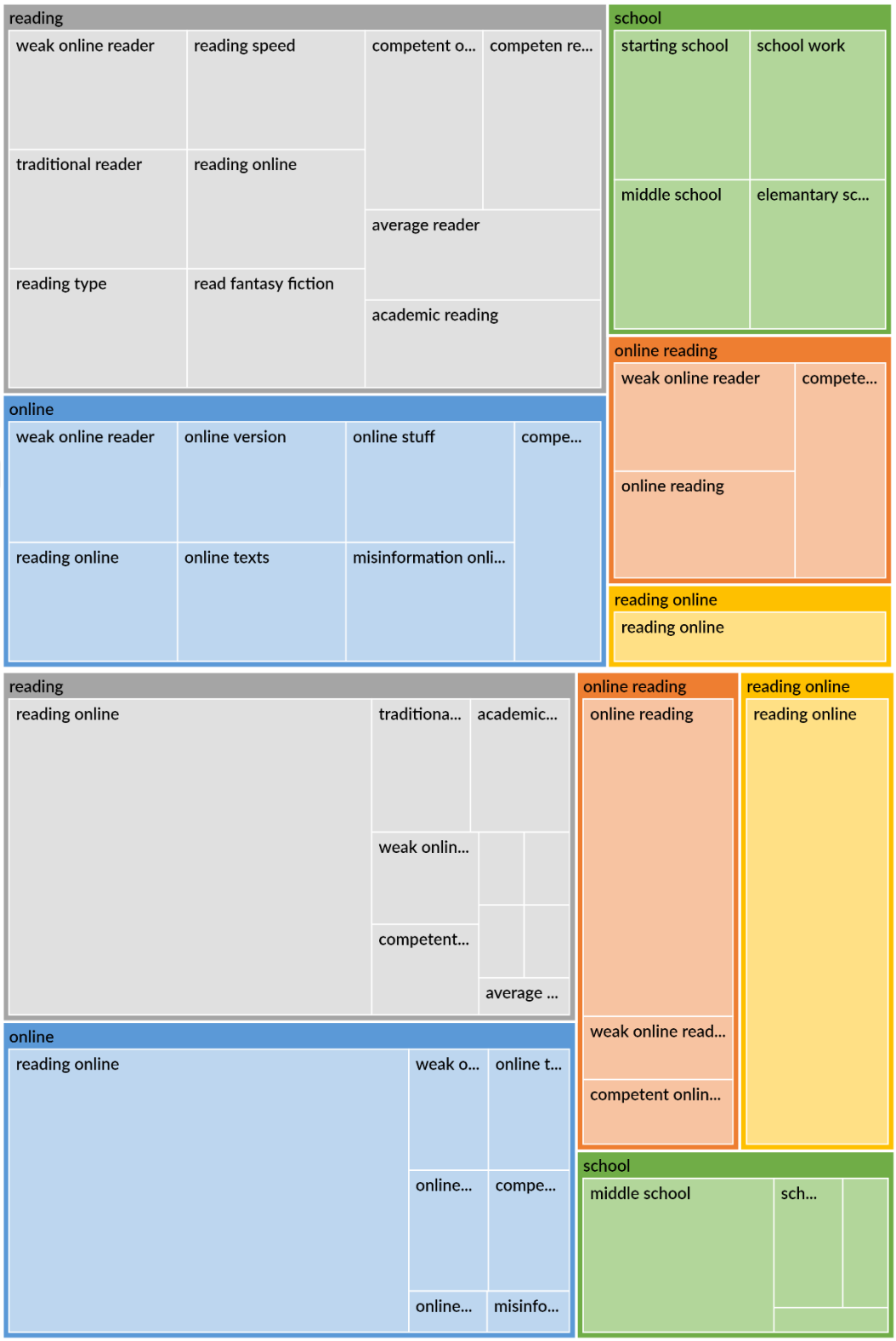
	Never	Occasionally	Sometimes	Usually	Always
1. I have a purpose in mind when I read online.					
2. I participate in live chat with other learners of English.					
3. I participate with native speakers of English.					
4. I take notes while reading online to help me understand what I read.					
5. I think about what I know to help me understand what I read online.					
6. I take an overal view of the online text to see what it is before reading it.					
7. When online text becomes difficult, I read aloud to help me understand what I read.					
8. I think about whether the content of the online text fits my reading purpose.					
9. I read slowly and carefully to make sure I understand what I am reading online.					
10. I review the online text first by noting its characteristics like length and organization.					
11. I try to get back on track when I lose concentration.					
12. I print out a hard copy of the online text then underline or circle information to help me remember it.					
13. I adjust my reading speed according to what I am reading online.					
14. When reading online, I decide what to read closely and what to ignore.					
15. I use reference materials (e.g. an online dictionary) to help me understand what I read online.					
16. When online text becomes difficult, I pay closer attention to what I am reading.					
17. I read pages on the Internet for academic purposes.					
18. I use tables, figures, and pictures in the online text to increase my understanding.					
19. I stop from time to time and think about what I am reading online.					
20. I use context clues to help me better understand what I					

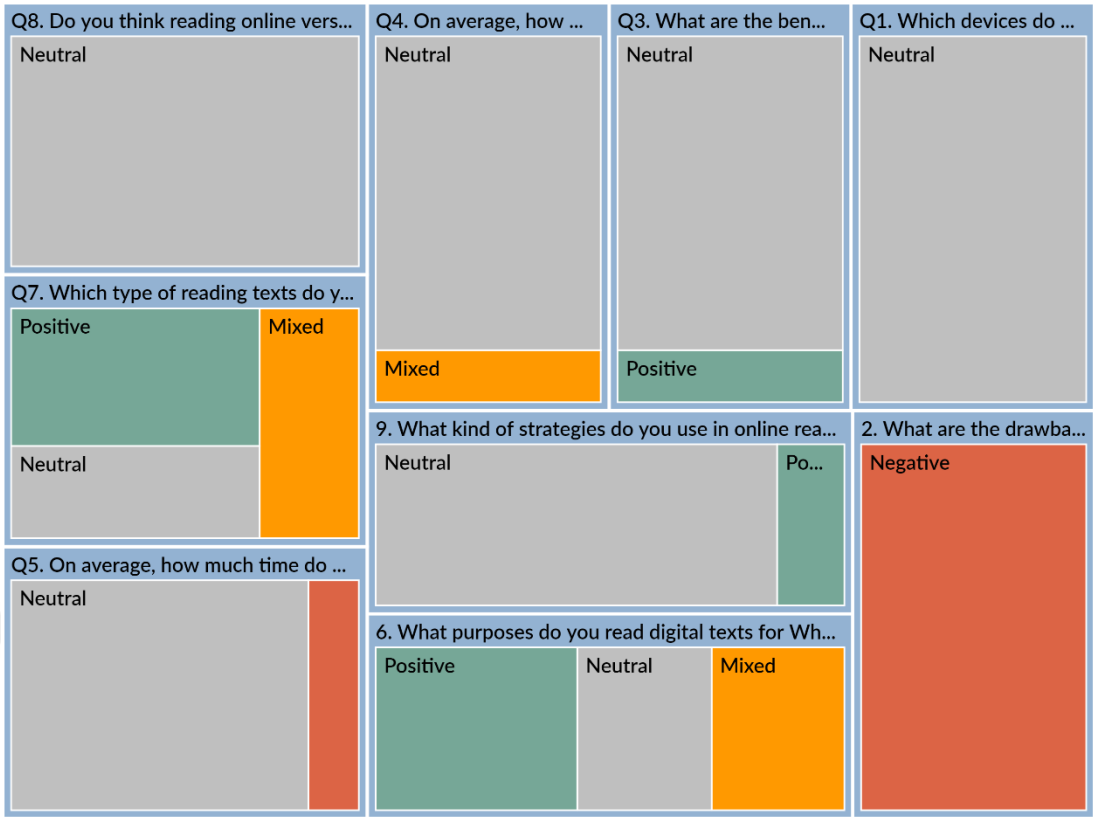
am reading online.					
21. I paraphrase (restate ideas in my own words) to better understand what I read online.					
22. I try to picture or visualize information to help remember what I read online.					
23. I use typographical features like bold face and italics to identify key information.					
24. I critically analyze and evaluate the information presented in the online text.					
25. I go back and forth in the online text to find relationships among ideas in it.					
26. I check my understanding when I come across new information.					
27. I try to guess what the content of the online text is about when I read.					
28. When online text becomes difficult, I re-read it to increase my understanding.					
29. I ask myself questions I like to have answered in the online text.					
30. I check to see if my guesses about the online text are right or wrong.					
31. When I read online, I gues the meaning of unknown words or phrases.					
32. I scan the online text to get a basic idea of whether it will serve my purposes before choosing to read it.					
33. I read pages on the Internet for fun.					
34. I critically evaluate the online text before choosing to use information I read online.					
35. I can distinguish between fact and opinion in online texts.					
36. When reading online, I look for sites that cover both sides of an issue.					
37. When reading online, I translate from English into my native language.					
38. When reading online, I think about information in both English and my mother tongue.					

Appendix B: Digital Reading Habits Scale

	Never	Seldom	Mostly	Always
1. I am interested in reading digital media (on-screen).				
2. I feel comfortable when reading in digital media.				
3. I feel anxious when reading in digital media.				
4. My reading comprehension skills are restricted when utilizing technologies for reading.				
5. Reading in digital media increases my motivation for comprehension.				
6. I enjoy reading the content shared on digital media.				
7. I trust the content I read on digital devices.				
8. I consider reading on the screen as a part of my life.				
9. I regularly read on the screen in digital media.				
10. I read in digital media whenever I need to.				
11. I read in digital media to get information and the news.				
12. I sometimes read in digital media for fun or chat with others.				
13. I archive the content I am interested in or I consider important in digital media.				
14. I prefer reading on screen instead of reading printed resources.				
15. Even though I read digital resources, I always check printed resources when available.				
16. I can use various electronic devices (computer, mobile phone, tablet etc.)				
17. I learn about new and interesting things on digital resources.				
18. I comprehend the content better and quicket when I read in on electronic devices.				
19. I usually comment on and share the content during digital reading.				
20. I prefer to read using mobile and portable devices.				
21. I become active when I need to use digital devices/screens in the classes.				
22. I spend spare time by reading and chatting on the mobile phone.				
23. I rush to read the text as soon as possible, when reading on the screen.				
24. I pay attention to different resources (dictionary, comments), visuals and sounds (photograph, video, links, etc.) when reading in digital media.				
25. I also utilize other digital media to read related content while reading on the screen.				
26. I discuss about the content I read in digital media with others.				

APPENDIX C: Interview Analysis




Q8. Do you think reading online vers...
Neutral
Q4. On average, how ...
Neutral
Mixed
Q3. What are the ben...
Neutral
Positive
Q1. Which devices do ...
Neutral
Q7. Which type of reading texts do y...
Positive
Mixed
Neutral
9. What kind of strategies do you use in online rea...
Neutral
Po...
2. What are the drawba...
Negative
Q5. On average, how much time do ...
Neutral
6. What purposes do you read digital texts for Wh...
Positive
Neutral
Mixed

Themes	Categories (Codes)	Citation	Frequency
1. Previous Reading Experience/Reading Background	1.1. Phone	R1: "Phone and laptop. I started using them before starting school." R2: "Laptop and mobile phone. I started using them when I was in middle school." R3: "I use my phone and laptop the most. I started using them before school."" R4: "I use my phone and laptop and I started using them when I was in middle school." R5: "Mobile phone and laptop. I started using them in middle school." R6: "Phone and laptop. I started using them before I started school.""	6
	1.2. Laptop	R1: "Phone and laptop. I started using them before starting school." R2: "Laptop and mobile phone. I started using them when I was in middle school." R3: "I use my phone and laptop the most. I started using them before school." R4: "I use my phone and laptop and I started using them when I was in middle school." R5: "Mobile phone and laptop. I started using them in middle school." R6: "Phone and laptop. I started using them before I started school." R7: "I mostly use my mobile phone. I have been using it since middle school."	7
	1.3. Preference for Online Texts	R4: "I prefer online texts but I don't think there are differences." R5: "Print materials are good for homeworks or school work but I prefer online texts because when i have something physical in my hands i feel like i need to commit to finishing it but with online stuff I feel more free to read when I want to which takes away the pressure and makes me more willing." R6: "I like online texts because they are easier to reach." R7: "Obviously, I love to read printed books, but it is more convenient to read online because it is very difficult to buy them now. I think they are very different compared to time efficiency and cost. You can reach a book simply by typing the title, whereas you need to look at stores or libraries for traditional reading."	4
	1.4. Preference for Print Texts	R1: "I prefer print materials because reading online hurts my head and eyes." R2: "I prefer print materials. Feeling the quality of the paper and the smell of it. The sound of the pencil's strokes on the paper... You can say that I'm just romanticizing it but it is what it is.." R3: "I like to have a piece of paper with me when studying, screens distract me."	3
	1.5. Weak Traditional Reader	R6: "0 hours. I used to read a lot in the past as a traditional reader so I would put myself in competent, but I rarely read traditionally now. So, I can be considered a weak traditional reader."	1
	1.6. Average Traditional Reader	R4: "Less than 1 hour. I'm average." R5: "maybe 1 hour maybe less. I'm an average reader."	2
	1.7. Competent Traditional Reader	R1: "At least 25 pages, however it takes. It's usually 1-2 hours. I am a competent reader." R2: "1-3 hours. I would say I'm competent." R3: "Half an hour maybe. So 0-1. My competency depends on the book I'm reading. I'd say competent to expert." R7: "2 hours a day. I'm an expert, 100%."	4
	1.8. Weak Online Reader	R1: "Only when needed, such as a research work. So maybe 1 hour. I'm a weak online reader."	1
	1.9. Average Online Reader	R2: "1 hour. I'm average online reader." R3: "3 hours. I'll say I'm average." R4: "2 hours. Average." R5: "At least 3 hours. I think I'm a competent online reader."	3
	1.10. Competent Online Reader	R6: "3-4 hours. I'm highly competent. I dedicate a large portion of my day to reading online." R7: "3 hours a day. I find myself competent in this regard."	3
2. Drawbacks & Benefits of Online Reading	2.1. Physical Challenges	R1: "I don't see any drawbacks in terms of comprehension, only physical ones such as headache or my eyes hurting. " R3: "Online reading makes my eyes hurt and it gives me a headache." R1: "I prefer print materials because reading online hurts my head and eyes."	3
	2.2. Visually Challenging	R1: "I don't see any drawbacks in terms of comprehension, only physical ones such as headache or my eyes hurting." R3: "Online reading makes my eyes hurt." R4: "It actually makes your eyes weak and since there are a lot of images and lights coming from your screen." R6: "It strains your eyes." R7: "Since I wear glasses and my eyes are sensitive, using a phone/computer is really tiring for me."	6
	2.3. Distracting	R1: "I prefer print materials because reading online hurts my head and eyes." R2: "You can't the feel and smell the paper. I need that for better comprehension. There are also more distractors when it comes to online reading. " R3: "I like to have a piece of paper with me when studying, screens distract me. " R5: "sometimes I get too lost in it that I forget to do other tasks like sleeping. " R7: "But it also creates a problem where you switch between books too fast and never reach the end while reading online."	4
	2.4. Hinders the Reading Habit	R3: " I think it hinders the habit of reading as it makes us lazy." R6: "You get too comfortable switching between stories, making you accustomed to fast-paced short stories rather than long novels. So it hinders the habit of reading classic novels and long stories, yes."	2
	2.5. Laziness	R3: " I think it hinders the habit of reading as it makes us lazy."	1
	2.6. Misinformation	R5: "There's lots of misinformation online because of the vast amount of data available plus sometimes I get too lost in it ."	1

	2.7. Increases Reading	R1: " Yes, it can facilitate the habit of reading for the people who don't like books." R4: ".It is easier nowadays for young people." R5: "Online makes it more enjoable therefore it increases my will. Yes, it can increase the amount you read, especially in today's world." R6: "I think it helps form a different habit of reading that is not desired by schools but still helpful for improving reading speed and brain development." R7: "Being able to read whenever and wherever I want is an advantage for me. For the new generation, this is of course easier." R4: "I think it encourages people to read even more."	5
	2.8. Resourceful	R1: "It provides you with fast access to a huge amount of information. R4: "Since books are expensive in Turkey today, it actually help readers economically and in online there are plenty of resources you can use R6: "You can experience different genres and styles without spending too much time shuffling books in the library or bookstore."	3
	2.9. Easy Access/Efficient	R1: "It provides you with fast access to a huge amount of information." R2: "You don't have carry lots of book which can be physically demanding. R7: "Being able to read whenever and wherever I want is an advantage for me. " R7: "I think they are very different compared to time efficiency and cost. You can reach a book simply by typing the title, whereas you need to look at stores or libraries for traditional reading." R6: "Online texts because they are easier to reach"	5
	2.10. Cost-Effective	R2: "You don't have carry lots of book which can be physically demanding. It is cheaper than buying all those books. R3: "You save money because you don't spend it on books R4: "Since books are expensive in Turkey today, it actually help readers economically and in online R6: "You can experience different genres and styles without spending too much time shuffling books in the library or bookstore with minimal cost." R7: "Obviously, I love to read printed books, but it is more convenient to read online because it is very difficult to buy them now."	5
	2.11. Less Pressure	R5: "Print materials are good for homeworks or school work but i prefer online texts because when i have something physical in my hands i feel like i need to commit to finishing it but with online stuff i feel more free to read when i want to which takes away the pressure and makes me more willing. as much as they have their differences." R5: "we may not always feel like studying or reading physical books but online makes it more enjoable therefore it increases my will."	2
	2.12. No Physical Impact	R2: "You can't the feel and smell the paper. I need that for better comprehension. " R2: "I prefer print materials. Feeling the quality of the paper and the smell of it. The sound of the pencil's strokes on the paper... You can say that I'm just romanticizing it but it is what it is. R3: "I like to have a piece of paper with me when studying, screens distract me."	3
	2.13. Comprehension Issues	R1: "Printed materials make me understand more because I can take notes on it." R2: "If I read printed version, I can definitely say that my comprehension level goes higher according to those in the online version." R3: "Reading from a paper is much better when it comes to comprehension." R5: "I think i understand better when it comes to print materials." R7: I would prefer reading on print if only they were cheaper because I understand better with print materials.	5
Online Reading Experience			
	3.1. Academic Reading	R1: "Academic reading. All kind of genres except poetry, so fiction, novels, academic texts, everyday knowledge." R2: "Academic reading, books that I can't afford, news. I like reading all of them. I don't really have a reading type but if I have to say something then it would be; poetry, fiction, novel, philosophy." R3: "I read for research reasons and for pleasure. Science fiction, fantasy, science facts." R4: "Reading for pleasure academic reading. Fiction, crime, nonfiction." R5: "Social media, sometimes academic reading, sometimes just books for pleasure. Fiction and nonfiction mostly, sometimes poetry." R6: "For pleasure and academic reading. I usually read comics, mangas, short books and forums. I also read some papers on my research and topics that I am interested in. Fiction, fantasy, horror, philosophy, science."	6
	3.2. Pleasure Reading	R3: "I read for research reasons and for pleasure. Science fiction, fantasy, science facts." R4: "Reading for pleasure academic reading. Fiction, crime, nonfiction." R5: "Social media, sometimes academic reading, sometimes just books for pleasure. Fiction and nonfiction mostly, sometimes poetry." R6: "For pleasure and academic reading. I usually read comics, mangas, short books and forums. I also read some papers on my research and topics that I am interested in. Fiction, fantasy, horror, philosophy, science."	4
	3.3. Everyday Knowledge	R1: "Academic reading. All kind of genres except poetry, so fiction, novels, academic texts, everyday knowledge." R2: "Academic reading, books that I can't afford, news." R7: "I generally read for news .I generally like to read literary stuff, but I also read fantasy fiction."	3
	3.4. Fiction	R1: "...All kind of genres except poetry, so fiction, novels." R3: "...Science fiction, fantasy." R4: "...Fiction, crime." R5: "...Fiction mostly, sometimes poetry." R6: "I usually read comics, mangas, short books and forums.Fiction, fantasy, horror, philosophy, science."	5
	3.8. Nonfiction	R2: "Academic reading, books that I can't afford, news. I like reading all of them. I don't really have a reading type but if I have to say something then it would be; poetry, fiction, novel, philosophy." R7: "I generally read for news . I generally like to read literary stuff."	2

3.9. Dictionaires	R1: "I mostly use dictionaries." R2: "If I am reading online, most probably I am reading in English and as it's not my mother tongue, I try to guess the meaning and use dictionaries. " R7: "Actually, it's mostly fun trying to guess the meaning, but sometimes I come across things that make it almost impossible to guess. In such cases, I use small searches and a dictionary."	**3**
3.10. Guessing	R2: "If I am reading online, most probably I am reading in English and as it's not my mother tongue, I try to guess the meaning and use dictionaries. " R4: "While reading online, I use guessing meaning and previewing the text." R5: "I preview the text and guess meanings almost everytime, I don't use dictionaries unless I really need it to understand." R6:" I usually guess meaning based from text or other people's interpretations in the forums." R7: "Actually, it's mostly fun trying to guess the meaning, but sometimes I come across things that make it almost impossible to guess. In such cases, I use small searches and a dictionary."	**5**
3.11. Previewing	R4: Guessing meaning and previewing the text. R5: I preview the text and guess meanings almost everytime, I don't use dictionaries unless I really need it to understand. R6: I usually guess meaning based from text or other people's interpretations in the forums.	**3**
3.12. Elementary School	R6: "I started to read online when I was in elemantary school."	**1**
3.13. Middle School	R4: "I use my phone and laptop and I started using them, as well as reading online when I was in middle school." R5: "Mobile phone and laptop. I started using them in middle school and have been reading online since then."	**2**
3.14. High School	R1: "Phone and laptop. I started using them before starting school. I started to read online when I was in high school." R2: "Laptop and mobile phone. I started using them when I was in middle school. I started online reading when I was in high school." R3: "I use my phone and laptop the most. I started using them before school and started reading online when I was in high school." R7: "I mostly use my mobile phone. I have been using it since middle school. I started to read online in high school."	**4**

APPENDIX D: Frequent Words

Word	Count	Weighted Percentage (%)
reading	42	4,73
online	29	3,27
read	23	2,59
think	16	1,80
school	13	1,46
started	12	1,35
books	11	1,24
habit	9	1,01
hours	9	1,01
like	9	1,01
using	9	1,01
different	8	0,90
phone	8	0,90
use	8	0,90
fiction	7	0,79
materials	7	0,79
reader	7	0,79
academic	6	0,68
comprehension	6	0,68
eyes	6	0,68
laptop	6	0,68
print	6	0,68
since	6	0,68
average	5	0,56
better	5	0,56
competent	5	0,56
feel	5	0,56
guess	5	0,56
hour	5	0,56
paper	5	0,56
pleasure	5	0,56
sometimes	5	0,56
easier	4	0,45
high	4	0,45
hinders	4	0,45

APPENDIX D: Permission to Administer the Scales

APPENDIX E: IRB APPROVAL

APPENDIX F: INFORMED CONSENT FORM