DIGITAL LITERACY: RAISING PROSPECTIVE

TEACHERS' AWARENESS OF THE

FAKE NEWS SPREADING THROUGH THE

SOCIAL MEDIA

DISSERTATION

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ÖZET

DIJITAL OKURYAZARLIK: ÖĞRETMEN ADAYLARININ SOSYAL MEDYADA YAYILAN SAHTE HABERLERE KARŞI FARKINDALIKLARINI ARTIRMAK

Hanmyrat SARIYEV

Bilgisayar ve Öğretim Teknolojileri Eğitimi Anabilim Dalı

Bilgisayar ve Öğretim Teknolojisi Eğitimi Programı

Anadolu Üniversitesi, Eğitim Bilimleri Enstitüsü, Aralık 2021

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Tez kapsamında yürütülen araştırmada, öğretmen adaylara, eşzamansız olarak sunulan öğretim yoluyla, medya okuryazarlığı müdahalesi çerçevesinde dijital okuryazarlık becerilerini geliştirmeyi amaçlamıştır. Çalışmanın odak noktası sahte haber olgusu olduğundan, öğretmen adaylara Medya ve Bilgi Okuryazarlığı (MIL) ile ilgili teorik bilgilerini sunulmasının yanı sıra, eşzamansız olarak sunulan uygulama kapsamında, diğer bir ifadeyle, müdahale, bireylerin bilgileri teyit etme becerilerini ve özellikle 'yanal okuma' stratejisini benimsetmeyi de amaçlamıştır. Eşzamansız olarak gerçekleşen öğrenim, Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü'nde öğrenimlerini sürdüren son sınıf öğrencilere sunulan zorunlu ders kapsamında yürütüldü. Çalışmanın bulgularına dayanarak, müdahalenin, öğretmen adaylarının eleştirel medya okuryazarlığını ve özellikle yeni medya okuryazarlığı ilişkin eleştirel tüketim boyutunu büyük ölçüde artırdığını gözlemlenmiştir. Ayrıca, müdahalenin uygulama kısmının, belli bir dereceye kadar, biçimlendirici değerlendirmeler kapsamında tanıtılan stratejiler sayesinde, öğrencilerin çevrimiçi bilgileri kontrol etme becerilerinin geliştirdiğini de gözlemlenmiştir. Bununla birlikte, çalışmanın bulgularına dayanarak, tez yazarı, çalışmaya katılan öğretmen adaylarının halen üst düzey düşünme becerileri, yani eleştirel düşünme becerileri kazanma gereksinimi içinde oldukları ve bu nedenle gelecek çalışmalarda, ilgili araştırmacıların ve öğretmen eğitimcilerinin eleştirel düşünme becerileri geliştirmeye odaklanmaları gerekmektediğini önermektedir.

Anahtar Sözcükler: Dijital Okuryazarlık, Bilgileri doğrulama, Medya ve Bilgi Okuryazarlığı (MIL), Sahte haberler, Yanal okuma stratejisi

ABSTRACT

DIGITAL LITERACY: RAISING PROSPECTIVE TEACHERS' AWARENESS OF THE FAKE NEWS SPREADING THROUGH THE SOCIAL MEDIA

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The current study aimed at enhancing prospective teachers' digital literacy skills within media literacy intervention by means of instruction delivered asynchronously. Since the focus of the study was the fake news phenomenon, besides furthering prospective teachers' theoretical knowledge on MIL, the intervention aimed at promoting individual fact-checking skills, and in particular learning lateral reading strategy. Thus, besides training on how to perform 'lateral reading', the practice part of the intervention aimed at enhancing individuals' abilities to question, and critically evaluate online sources, social media content in particular. The intervention was embedded within a compulsory course provided for senior students studying at the Department of Computer Education and Instructional Technology. The findings of the study suggest that the intervention, to a greater extent, enhanced prospective teachers' critical media literacy, and particularly the critical consuming dimension as to the new media literacy. Moreover, the intervention, to a certain extent, fostered students' abilities to fact-check, in view of the strategies introduced within the formative assessments. Nevertheless, based on the findings, prospective teachers are still in need of acquiring higher-order thinking skills, that is, critical thinking skills, and thus, in future studies, teacher educators, as well as media instructors, should focus on promoting these skills.

Keywords: Digital Literacy, Fact-checking, Fake news, Lateral reading, Media and Information Literacy (MIL)

ACKNOWLEDGMENTS

Dedicated to my father, **SARIYEV WELMYRAT**

Ruhun şad olsun, nana. Любили, любим, помним …

STATEMENT OF COMPLIANCE WITH ETHICAL PRINCIPLES AND RULES

I hereby truthfully declare that this thesis is an original work prepared by me; that I have behaved in accordance with the scientific ethical principles and rules throughout the stages of preparation, data collection, analysis and presentation of my work; that I have cited the sources of all the data and information that could be obtained within the scope of this study, and included these sources in the references section; and that this study has been scanned for plagiarism with "Turnitin" plagiarism detection program used by Anadolu University, and that "it does not have any plagiarism" whatsoever. I also declare that, if a case contrary to my declaration is detected in my work at any time, I hereby express my consent to all the ethical and legal consequences that are involved.

Hanmyrat SARIYEV

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

COR   : Civic Online Reasoning

HOTS : Higher Order Thinking Skills

MIL   : Media and Information Literacy

1. INTRODUCTION

> Science is the only true guide in life; to look for any other
> guidelines, to consider alternative references is
> unawareness, illiteracy, and misguidedness.
>
> (Mustafa Kemal Ataturk, 1924)

In the current Digital Age, also known as New Media Age or Information Age, citizens are able to communicate and search for required information on the Internet much more efficiently, to wit, easier, cheaper, and faster than ever before. As a result of technological advancements, and especially for the Internet technology, individuals are granted an opportunity to communicate instantaneously, and even to contribute to the process of innovation and creation; or to put simply, to join online communities, create and disseminate information, media content online without being restrained. That is, unlike in the past, people today are able to connect, communicate with one another, access a wealth of information sources within one click and without a need to travel. As a result, as once printing technology has triggered human progress, the Internet today is facilitating and accelerating the next progress, a process known as digital transformation. That is, the advances in digital technologies including the availability of the internet have extended human capabilities by enabling us, humans to create and share information, knowledge and thus, reside on the Internet not only as passive consumers but rather producers of information. Inevitably, unlike in the past, individuals today have to deal not with the scarcity of information but with an excess; especially considering that the citizens are being surrounded by not only traditional media but also with new media concurrently. Thanks to advancements in science and technology, today we enjoy all the outcomes without the need for understanding the effects of technology, the system behind it, how it is made and how it works, and what is more, how does particular technology affect our behavior. For instance, many of us are not aware of the fact that by nature, we seek out information that confirms what we already believe in, and with that bias, called "confirmation bias", many of us, navigating through social media, naturally, prefer to be connected with like-minded individuals, so-called homophily phenomenon (Halberstam & Knight, 2016); and owing to that tendency; through 'selective exposure', we eventually, found ourselves trapped in "echo chambers" (Cinelli et al., 2021), particular environments

created by and for us by social media algorithms, i.e., automatic recommendations that limit the exposure to diverse perspectives, the rooms where we being exposed to homogenous information, share the same narrative and at the end of the day, encounter and reinforce those viewpoints we already 'say yes to'. That is, while technology is becoming more complex, and more accessible, we become less aware of it, less aware of how it works and how it affects us. With the new media, we found ourselves surrounded by an unlimited amount of information, a knowledge that we were not ready to process since everyone, either social media savvy or not, every social media user became a prosumer, a potential source of, a disseminator of information, disinformation, and misinformation. We found that we are not smart enough to understand the effect of social media on our political choices, discern pseudo-news from real news on social media platforms such as YouTube, Twitter, and Facebook. We found ourselves surrounded by new media, by social media platforms, the fertile ground for spreading political misinformation, and presently, to fight the falsehood coming through these platforms, to fight the next generation of disinformation known as fake news, every one of us is expected to be a savvy consumer, intelligent user, the online critic that would be able to judge the reliability of information sources. Hence, educators became the key actors who are expected to cultivate essential skills that would enable students, empower them to navigate safely online, and help students to assess the credibility of online sources and discern pseudo-news, that is social media messages that look like real news.

Fake news is a recent phenomenon that tends to spread on social media like wildfire. Accordingly, fake news is seen as a 'product' of a new media and new generation of the internet, since the nature, i.e., the structure of the internet has been transformed and that 'creative' transformation, brought to light the covert potential of misleading messages. Specifically, given the speed of diffusion within social media platforms, that is virality, combined with the scope, truly exposed the potential, and reach of fake news. That is, fake news can be regarded as one of the negative outcomes of the information revolution. The fake news, or broadly, misleading online messages, or simply, pseudo-news, revealed that the majority of students, i.e., young media consumers are defenseless against 'infodemic' of mis- and dis- information (Breakstone et al., 2021; Buchanan, 2020). Fake news revealed that almost every one of us is vulnerable since lies spread more quickly than facts (Buchanan, 2020; Vosoughi et al., 2018). Moreover, those who believe in everything they see and read, are an easy target for an infodemic. Consequently, while

2

the nature of information and disinformation has changed along with the media channels, human literacies remained the same (OECD, 2021), i.e., somewhat static, and what is more, individuals' attention span has decreased at the time when technologies have grown more complex, and amount of information has increased exponentially. Paradoxically, amid a proliferation of information, arguably, many of us are not smart enough, i.e., we found that we lack the understanding of how to access reliable information as well as evaluate the quality of digital information (Breakstone et al., 2021; Wineburg & McGrew 2019). That is, we found that many of us, are inexperienced media consumers and thus we are vulnerable to online disinformation and psychological manipulations. In other words, we were caught unprepared amid rapid digital transformation, a.k.a. digitalization, whereas those who were supposed to educate us, media literacy educators, were not ready to cultivate particular digital literacy competencies, and thus, due to unawareness of the new phenomenons spreading on social media and for the lack of essential skills, specifically digital literacy abilities and specifically fact-checking skills, we, as adults, and the students have become an easy target for the misleading social and political information, disinformation spreading online also known as fake news.

1.1 Learning in the Digital Age

The young generation, surrounded by ubiquitous technology, is being shaped by digital devices. Within sweeping digitalization, youngsters spending more time than others online enjoy the innovations of the new Digital Age (Kemp, 2020). That is, the so-called generation of "digital natives" (Prensky, 2001), thrive in the technology abundant world by creating, sharing, engaging, and learning on different types of social media platforms such as YouTube (video sharing), Twitter (microblogging), Snapchat and Instagram (photo sharing), Facebook and LinkedIn (social networking).

Although the words such as granted, provided, offered are frequently utilized as if these platforms are cost-free, the majority of social media platforms are designed for-profit; and therefore, to generate income, these platforms might collect and sell out users' data to advertisers and other parties, as in case of Cambridge Analytica scandal (Cooper, 2019, p. 445). In this context, the Cambridge Analytica–Facebook scandal, in brief, is Facebook's release of approximately 87 million Facebook users' data to Cambridge Analytica, who in turn, used that users' data to target voters through psychographic profiling algorithms (Hu, 2020). In other words, Facebook's users' data has been exploited

without user authorization for a political cause. Accordingly, though social media are promoted as free environments that enable an exchange of ideas and goods, a space where every individual is free to express their ideas and opinions, one should consider that the phrase by Richard Serra, if the service is free, you are the product, is quite true.

Information has great and rather covert potential. That is, information (knowledge) and media together with information and communications technologies (ICT's), are more than just content and a tool, a means, or a message. Information (knowledge) and media (know-how) is a power capable to control and shape peoples' minds; and therefore, media with its messages is an ulterior power that rules the roost (Herman & Chomsky, 2010). As a matter of fact, the very verb "to inform" originally comes from the Latin verb 'informare', meaning 'give form, shape and educate', as well as 'form the mind of and teach'. Accordingly, formal, and informal formation, are rather two sides of the same coin. Both mass media and formal education, 'inform' people, shape their understandings of the world, of the surrounding reality; and accordingly, mass media and education form (educate) particular society.

Mass media historically have been misused, exploited for a number of reasons. That is, false information known under different names as disinformation, misinformation, and propaganda has largely spread for political agenda; and therefore, mass media manipulations (as a sociopolitical phenomenon) are not new but rather well-established phenomena (Buckingham, 2019; Vasu et al. 2018). That is, since every single media, has presented and do presents its unique reality, a carefully crafted reflection of reality, media messages on numerous occasions, were meant to shape the minds of the "herds"; so that, the media agents could manufacture the consent of the public (Herman & Chomsky, 2010), i.e., 'consent of the governed'. Since historical patterns somewhat repeat themselves, the new media has been subjected to similar treatment, i.e., are being exploited, and thus once again, a new 'digital' tool, information mediated by digital technologies, is widely used for organizing "disinformation campaigns" (Vasu et al, 2018, p.5). That is, the Internet and social media is being used to spread misinformation and disinformation, previously termed propaganda (Ross & Rivers, 2018).

Considered as free, social media platforms are profit-based enterprises, where disinformation, so-called fake news, is created by some or others, mainly with the motive of profit. That is, social media as a new media, once again are being used against the gullible public, being exploited to shape public opinion; and thus, new media as legacy

media, already turned into a next weapon. In other words, social media platforms, as once Gutenberg press, and mass media channels, are being misused for political ends, and thus social media users, are being subjected to deliberate manipulations, misrepresentations, and fabrications. In this context, every user on social media should be aware that media messages (including fake news) are constructed, and thus one should be aware of what the message represents and what kind of 'value' does it conveys, i.e., who is the creator, what is the motive, and who is intended audience. Social media platforms such as Facebook and Twitter, as new media, today are being used within the sociopolitical domain as brand-new channels through which disinformation, fake news, and propaganda are spreading. Hence, social media became a new means for information war (Wardle, 2017).

Social media, for now, unlike legacy media is a more representative channel for the public, i.e., rather more democratic in a broad sense, since social media platforms do not create content but provide the means, that is, online space to create and share content literally for everyone. In this context, social media enabling sharing the true stories, indeed, enabled to bypass the mainstream media gatekeepers considering authoritarian states. That is, new media liberated individuals by allowing them to access alternative information channels, news free from the influence of governments and corporations. In that sense, social media became a democratizing force. In other words, since social media has no gatekeepers, i.e., those in power who might control access to media as well, information created and spread, i.e., reality itself is not filtered as in the case with traditional media; and accordingly, since there is no gatekeeping on social media, every user is free to create and share his/her 'newsworthy' content, the digital content that would not be filtered prior to dissemination. Hence, social media today, is used for spreading the truth, partially the truth, or spreading the lies and partly lies. Social media platforms, in this regard, still share a common feature of traditional media since social media has the same capacity to form (inform), i.e., shape individual's opinion, and thus, new media might be exploited exactly as old, brainwashing media. In other words, though new media has enabled to present, i.e., create and share alternative points of view, avoid mainstream media propaganda; has allowed a space for free expression, the same means, new media, in fact, are open and accessible literally to anyone; and therefore, social media users are still susceptible to ill content of those who exploit new media as a propaganda tool; of those who use new media technologies to spread disinformation and fake news.

While social media platforms today are regarded as means of democracy; particularly considering oppressive regimes since social media platforms enable to bypass "one-way" media propaganda including old media censorship, the same technology, has been successfully utilized to undermine democracy, in so-called liberal democracies. That is, while in oppressive regimes social media platforms such as Twitter and Facebook were used to bypass the censorship (media monopoly), and share a true story, in other states, these platforms have been utilized in the same fashion, and yet, they have been used to disseminate false stories and fake news (Vasu et al., 2018), fake news that has been described by Barack Obama as "a threat to a democracy" (Buckingham, 2019, p. 214). That is, paradoxically, social media platforms cut both ways.

Taking into account the recent rise of populism across liberal democracies, social media platforms, are believed to be liable for triggering the rise of a new era known as post-truth politics (Fuller, 2018; Suiter, 2016). In this context, fake news can be viewed as the manifestation of post-truth politics in form of artifacts within the new media sphere; especially since with the advent of the new media, "the degree to which a news narrative is able to align with an individual's perception of the world irrespective of factual accuracy, truthfulness, and objective reality" became "what matters most in affirming individuals' beliefs" (Ross & Rivers, 2018, p. 3), and thus, any assertions, encountered online, that mere "feel right" but have no basis, is easily accepted as fact by some or other individuals. Post-truth politics, in this context, can be referred to as "politics where appeals to emotion are dominant and factual rebuttals or fact checks are ignored on the basis that they are mere assertions" (Suiter, 2016, p. 25). Taking into account the definition, Alpay (2020, p. 77) argues that within post-truth politics, the politician and the voters, those devoted or who support that politician, are aware of the fact that their political communication is based and constructed on lies; nevertheless, since both parties, the politician and the voters have financial and moral gains, the lies presented to voters are accepted as mere facts. In other words, within the new sociopolitical era, facts are irrelevant to those voters since the 'truth' nowadays is 'in the eye of the beholder'. New media effects, and fake news issues, in particular, have come under focus in recent years since scholars believe that digital technologies enabled and facilitated the diffusion of misinformation, disinformation, propaganda, and conspiracy theories, triggering the rise of post-truth politics, populism, and populist propaganda; the propaganda that aims to erode public trust in institutions (Fuller, 2018).

Given that young people spend a considerable amount of time on the Internet and social media, the quality and reliability of the information they are being exposed to directly affect their knowledge and perceptions. In this context, Aufderheide's (1993) argument that "media is constructed and construct reality" (p. 2), truly reveals a real threat of fake and misleading messages. In other words, as Buckingham (2019) emphasizes, "the dangers of fake news are fairly self-evident" (p.214). Unlike older generations, digital natives spend more time online rather than on legacy media (Kemp, 2020). Accordingly, digital technologies became rather an essential "limb" of the generation, considering that these digital technologies are ubiquitous. As a limb, digital technology, that is, mobile phones, social media, and computers connected to the Internet, overtly and covertly shapes young individual understandings, perceptions, and reasoning.

From an educational perspective, the Internet, as well as social media, becomes a new means of information delivery since the new media presents individuals with an online space full of information and knowledge. Hence, online environments currently turned into the leading learning environment where young individuals consciously or unconsciously, actively, or passively, acquire all kinds of knowledge (Bakker & Vreese, 2011; Groshek & Koc-Michalska, 2017). In this context, the quality of information does matter, since the information found on the Internet-based sources, unlike in encyclopedias, to a great extent is neither reliable nor accurate; and thus, once learned cannot be easily unlearnt. Accordingly, accessing reliable sources on the Internet alongside evaluating digital content becomes a real challenge for young learners.

Taking into account the time spent on the Internet, individuals in Turkey spend almost eight hours online, including three hours on social media (Kemp, 2020). Hence, time spent online has already surpassed time spent in formal learning environments, that is, schools, universities, etc. Furthermore, annually published statistics demonstrates that the time spent on social network sites (SNS's) such as Facebook, Instagram, and WhatsApp are constantly increasing (Kemp, 2020). In this context, the digital natives born during the digital revolution (Prensky,2001), evidently spent more time on electronic communication and less time on in-person interaction than older generations (Twenge et al., 2018). Hence, young generations' learning preferences, their habits have changed as well. For instance, Nee (2019) found that the first source of news for the young generation is the social media platforms, since the news, that has been created and shared

online by other users and their friends, are found among other posts; and thus, seeing news posts is a byproduct of other activities that take place on social media.

It is not a secret that social media is largely used for entertainment. Hence, social media somewhat as a casino, has become a brand-new playground for youngsters. Accordingly, as much as casinos, social media are designed to be attractive and captivate an audience, and thus, are programmed to be compelling on purpose; that is, by feature. Considering the premise, social media, stealing people's attention and time, does have a capacity to negatively affect individuals, and especially young individuals. In this context, Twenge (2017), argues that the young individuals exposed to mobile technologies and the Internet from the earliest ages have been associated with adverse emotional and physical conditions. Nevertheless, although a majority of parents are aware that inappropriate and unwise use of technology could harm their children, particularly considering limited life experience and cognitive development stage, most of these parents still encourage the practice from the earliest ages (Gasser et al., 2012). As a result, unable to process social media messages critically, children and young individuals are among the most vulnerable group that are being exposed to negative content, contradictory information found online.

Social media and the Internet are contaminated with false and misleading information and yet a great majority of people become accustomed to consuming information online.   In this context, according to Pew Research Center (Matsa & Shearer, 2018), two-thirds of Americans get at least some of the news on social media. Considering that the young generation, called digital natives, practically lives online, the number of those who consume news on social media is much higher. Since social media and the Internet, have become critical sources of information, the ability to assess the accuracy of the information, is the core competence, a prerequisite required to navigate digital information; where a lack of particular competence will result in a new kind of uninformed fake news consumers, online users that make irrational choices. In this context, researchers from Stanford University found that though the "digital natives" are "able to flit" within social media platforms such as Facebook, Twitter, and Instagram, these young individuals are "easily duped when it comes to evaluating information spreading on these platforms" (Wineburg & McGrew, 2016, p. 4).

Social media and the Internet, in particular, is a great source of information, and knowledge, and yet the main problem is where to look for and how to decide on what

information deserves to be read, i.e., consumed. For the majority of students who cannot afford to visit a library or buy a book, the Internet is a key source of information and thus, it is a library. To help the students to navigate through that library, it is essential to enhance students' digital literacy skills. Here, the first and most important step is to help and enable students to locate reliable sources of information; and empower these students to skillfully assess online sources.

Given the nature of social media messages, i.e., how they are created and spread, how they might be perceived, as well as the significance of the word news, the very word news, literally means new information, a novel message. Accordingly, prior to social media platforms, news as novel messages, has been distributed by a limited number of media channels such as newspapers, radio, and television, and therefore news, to a greater extent, has been associated with the concept of truth; in other words, by virtue of professional journalism, the news was considered more or less reliable. That is, disseminated through traditional media, information, at one time, believed to be the truth representing reality (Raspopova, 2017). Based on the premise, news in the past, to a greater extent, was meant to be based on the facts, i.e., pieces of evidence such as authentic video, photo, or writing records. Nevertheless, with the advent of digital technology (Fuller, 2018), and social media platforms such as Facebook and Twitter, in particular, facts had become trivial, and so-called 'news' spreading on social media, being accepted as accurate by gullible users, has turned to be viral and thus far-reaching. To sum up, the abovementioned criteria regarding the quality of news were partially true prior to the emergence of social media and new generations of the Internet; and yet today, though the media has changed, people's perception regarding the news, to some extent, remain unchanged.

Considering a possible means that would help to prevent negative effects of fake news (and interrelated age of post-truth politics), educators have a magic bullet and that is to enlighten individuals; and specifically, raise awareness on the subject matter by promoting new media literacy competencies and digital literacy skills (Cooper, 2019). Nevertheless, Buckingham (2019) argue that addressing media literacy education as a "magical panacea for or all media-related social and psychological ills" (p.217), is just an oversimplification of the extensive problem, particularly considering that "fake news is a symptom of much broader tendencies in the worlds of politics and media" (p.218). In other words, Buckingham (2019, p. 216) argues that merely media literacy education is

not sufficient to tackle the issue of misleading online messages since "fake news is by no means an isolated phenomenon", and rather should be regarded as a subset of the broader phenomenon known as post-truth politics; and for this reason, fake news "is not so straightforward and is unlikely to be so easy to eradicate". Based on the particular argument, though it is impracticable to explain the post-truth politics as a political culture within an intervention or even a semester; furthering students' understanding of what "fake news" looks like and how to tackle related dimensions of the phenomenon, i.e., instruct students on how to assess digital content (social media messages); is quite possible. In other words, fake news as a phenomenon is only the tip of the iceberg, where is the submerged side of the problem is the post-truth. Here, post-truth within politics can be referred to as simply lies, that are accepted as 'alternative' truth by partisans, since the truth and therefore the reality, are no longer objective and thus, in a new universe where perceptions matter more than actual reality; the truth is only a relative concept. Based on the argument, tackling only the visible dimension of the problem, i.e., fake news as a genre (Egelhofer & Lecheler, 2019), is feasible within the study, since perceiving the whole 'iceberg', that is introducing and understanding a broader concept known as post-truth politics within the intervention that last one semester, is beyond the bounds of possibility, taking into account the limited time and the aims of the study. In this context, since the current study focuses on fake news with reference to social media messages, introducing fake news as misleading digital content that spread on social media platforms such as YouTube, Twitter, and Facebook, has been considered as salient; and accordingly, to approach such misleading digital content, enhancing students' skills that would help assess the reliability of online messages, were prioritized.

Myths regarding digital literacy being innate to the young generation are widespread among not only parents and adults but also some educators, that is, teachers and teacher trainers (Kirschner & De Bruyckere, 2017). The reason behind that myth might be the vagueness of the concept, that is digital literacy. A particular concept gives an impression of being related to merely technology and thus seems to be more related to technical terms rather than an individual's cognitive processes (Buckingham, 2019). In this context, considering that the very word literacy has two meanings (Bawden, 2001); parents and the majority of adults might be cognizant of only the first meaning of the word, and that is, an "ability to read and write". In other words, adults might falsely perceive that if their children are able to 'read' and 'write' online, i.e., type or click the

play button on YouTube and watch a video, their children are digitally literate. However, adults are misguided and disregard the second meaning of the word literacy, and that is the "ability to read with meaning, and to understand". In other words, a second meaning of the word "literacy" goes beyond the sole ability "to know how something is done" (ability to type, click and search); or in other words, considering Bloom's taxonomy (1956), literacy goes beyond the first, bottom stage of the "thinking skills" pyramid, that Bloom has defined as simply "knowledge"; in a revised version the dimension is referred to as "remembering". Moreover, even taking into account the highest meta-cognitive knowledge for that dimension, "to use appropriately" (Forehand, 2010, p.4). Hence, the very word literacy, long gone beyond the meaning "to use appropriately", currently should have been perceived as the ability to critically analyze, evaluate, create (synthesize); or at least, make sense of new information. That is, the second, 'deeper' meaning of the very literacy involves higher order thinking skills (HOTS), considering Bloom's taxonomy, or in other words, includes critical thinking skills. In this respect, critical thinking as a concept, though have multiple meanings, including critical thinking "as judgment, as skepticism; as sensitive readings; and as rationality"; (Moore, 2013), within the educational context, can be defined as " a reflective and reasonable thinking that is focused on deciding on what to believe or do" (Ennis. 1985, p.45)

Gilster (1997), one of the first writers who realized the potential of the Internet, defined digital literacy as the "ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers" (p. 1). Based on a particular definition, it is evident that even then, in 1997, to understand, or as Gilster (p.6) underlines "mastering ideas, not keystrokes ", i.e., interpreting the meaning of online information, comes before, ability to use (share) information; and accordingly, understanding online information prior to using it, that is, understanding the digital content is fundamental for being considered as a digitally literate user.

According to Lankshear and Knobel (2008), digital literacy is closely related to "literacies of information" and thus rather embedded within information literacy, media literacy, and ICT literacy. Nevertheless, as the authors argue, the term has been considered ambiguous since a group of researchers has related the term to specific technical skills, while the others have been concerned more with "cognitive and social-emotional aspects of working in a digital environment" (Lankshear & Knobel, 2008, p.24). Thence, researchers argue that the plural version of the term 'digital literacies'

should be adopted instead of singular 'digital literacy' since the very "literacy is best understood as literacies", forasmuch as literacy as a practice entails sociocultural perspective (p.2). Regardless of the argument, digital literacy as a concept has evolved with technology, and digitalization in particular, and today, for young individuals who spend a considerable amount of time online, entails not just technical skills but cognitive skills. In other words, considering that young individuals prefer new media over old media (Kemp, 2020), and thus, consume news more likely on digital devices, the digital literacy, as a concept, has evolved with the information and media landscape, and thus, to a greater extent, refers to individuals' cognitive abilities navigating online rather than mere technical skills. According to Polizze (2020), digital literacy is accepted as "a variant of media literacy" by scholars within media studies, especially taking into account digital technologies, and the relevant studies "focus on functional or critical dimensions" of digital literacy (p.1). The functional dimension of digital literacy, in this context, "refers to the practical skills required to use digital technologies, including operational, information navigation, social and creative skills"; whereas the critical dimension deals with "the ability to evaluate online content in terms of bias and trustworthiness".

Considering that fake news is a real threat to democracy (Wineburg et al. 2018), tackling the issue, i.e., online falsehoods that spread like a virus, becomes critical in the context of not only media studies but also education; and accordingly, empowering students, instilling in them the skills that would help them effectively access reliable sources, assess the reliability of online sources, is more than a basic call within the 21ct century. Digital literacy is a fundamental literacy since we live in a Digital Age, and in a new, 'post-truth' world, the era that can be defined as a new environment full of deceit, hate, a time where false information spreading online, even though is rebutted, is easily accepted as truth since every message, is just an "assertion", and for "appeals to emotions", i.e., the way the messages made us feel, predominate the facts (Suiter, 2016). The set of skills, required to effectively navigate online and assess the quality of online information, arguably, are at the heart of digital literacy, and accordingly, since the focus of the study is fake news, enhancing digital literacy skills in prospective teachers, has been accepted as a 'remedy' that would help them to discern facts from fiction, real news from fake news. Based on the assumption, the researcher assigns digital literacy as a set of skills and cognitive abilities that enable individuals to effectively assess digital content.

Regardless of the thriving myth that young individuals called digital natives are digitally literate since they are able to use (technology and information) appropriately, studies involving thousands of students demonstrate that cultivating digital literacy, and particularly, a critical digital literacy competency known as "content evaluation" (Bawden, 2008) or simply, wise consumption of digital content, without proper instruction is challenging; and therefore, simply using, i.e., having operational or technical competencies, does not suggest that the youth is digitally literate, in the broad sense, and thus, able to make sense of and interpret digital content (Breakstone et al., 2021; McGrew et al.,2018; Wineburg et al, 2016).

Today, accessible information and digital technology, have facilitated the lives of millions and yet have disrupted the status quo, challenging almost every social realm including the old-school. Comparable to a challenge that old media experiences today, digital technologies are imposing new order, new rules for education. In order to swiftly adapt to the challenges and "go with the flow" rather than resist the changes, critical decisions should be made, and the roles of the educators and academic institutions should be reconsidered and reestablished accordingly. That is, educators and academic institutions should have been embracing digital transformation, integrating social media and digital technologies into the classrooms a long time ago. Education in this context was ought to withdraw static traditional institutional boundaries and convert them into dynamic ones since whenever educators neglect the public spaces, in this case, social media and the Internet, then others fill in (Farrow and Moe, 2019).

Digital technology ought to be integrated as a means rather than an end. That is, modern-day educators should be able to effectively utilize and adapt educational technology primarily for achieving real-life and effective learning outcomes. In this context, technology would never replace educators as long as educators provide superior interaction, demonstrate and establish expertise. Nevertheless, today academia somewhat loses its public role due to swift transformations induced by disruptive changes, i.e., digitalization, neoliberalism, raising populism and unlimited social media platforms, and to re-establish the authority and scholarly positions, academics certainly should move to digital platforms (Harrison and Luckett, 2019). Considering that "progressive" humanity enjoys the benefits of the Internet 2.0 and 3.0, education in less developed states still stands on 1.0; and thus, pedagogy in those countries became outdated a long time ago and thus today is worthless. The nature of information has changed and so do the means.

Today, information texts are dynamic, the social media content is dynamic, and it is created, shared, and spread exponentially. Accordingly, disinformation and misinformation, disguised as online news are steadily polluting information streams. As a result, amid the media and information revolution, the educational systems in the majority of the world lag behind the digitalization process, its consequences; and thus, educators are unable to upgrade critical competencies, digital literacy skills in citizens, the skills that would enable people to tackle the fake news. Here, the critical role is assigned to teacher educators, and specifically, teacher education institutions since the education of prospective teachers stand for the next generation students' knowledge, their expertise, the quality of students' learning, and thus, the quality of formal education itself; education of teachers, in this context, represents the smartness of the upcoming generations (M.K. Ataturk); not to mention that well-educated teacher provides the social "multiplier effect" (Wilson et al., 2014).

To remain static in the Digital Age, i.e., resistant to changes and "disconnected" from the online world, in the context of education, means to dismiss and dethrone formal education. To avoid the fatal error and to 'survive', Farrow and Moe (2019) advise that academics reclaim and reassert the status of the experts in digital spaces by actively engaging in online discussions. That is, to fight post-truth and fake news, academia should reinvent itself. The point is information, and knowledge today is no longer precious commodity held in the hands of legacy media or academia. Schools and universities nowadays are seen just as a doorstep required to be passed to receive an official diploma. To destroy such fairly accurate perception, academia should re-organize, move beyond the university walls and argue, defend themselves on social media, become more visible, demonstrate superiority and engage with the public, speak out, and at the end of the day, fight for the truth, "the just truth" (Ford, 2018), regardless of the pressure from the other parties.

1.2 Statement of the Problem

Although the young generation, referred to as "digital natives" is surrounded by digital technologies since childhood, a widespread belief among the older generation assuming that the children naturally acquire digital literacy, is a myth (Gasser et al. 2012; Kirschner & De Bruyckere, 2017). The assumption is so widespread that the majority of parents providing access to digital technologies, except that the means, such as

smartphones, would automatically make their children smart, enhance children's learning (Hobbs, 2010). Nevertheless, the fact that the young individuals, comparatively immersed with the online world and use digital technologies more often than the elder individuals, that is Generation Y and X, does not indicate that these young adults are digitally literate (Wineburg et al., 2016; Musgrove et al., 2018). In other words, young individuals do struggle to evaluate the credibility of online sources (Breakstone et al., 2021; Nygren & Guath, 2021), regardless of the myth of the digital native, i.e., mistaken belief that young adults, adolescents, and every individual born after 1984, so-called digital natives (Prensky, 2001), 'naturally' possess talents and abilities as to digital technologies, are capable to multitask, not to mention that the generation is able to "navigate the digital world for effective and efficient learning and knowledge construction (Kirschner & De Bruyckere, 2017, p. 140). Besides encouraging parents, children using digital technologies, fall to the same conclusion, claiming that they are expert researchers, just owing to the fact that they can find any information on Google (Vaidhyanathan, 2008). In this context, it is important to note that at the heart of digital literacy, besides the functional dimension, i.e., "practical skills necessary to use digital technologies", lies the critical dimension, and that is, "ability to evaluate online content in terms of bias and trustworthiness" (Polizzi, 2020, p.2). That is, in order to be considered as digitally literate, citizens, besides being able to navigate online information, should be able to assess the quality of online information. Here, abilities to assess online information are linked to critical thinking, that is, higher order thinking skills (HOTS) that are crucial both to media literacy as well as digital literacy (Polizzi, 2020). Taking into account that the use of digital technologies among children and young individuals is limited to specific activities, and particularly entertainment (Kemp, 2020; Vaidhyanathan, 2008); using new technology just for entertainment, or in other words, merely the ability to "Google it" and watch a video on YouTube, do not indicate that the young generation possesses critical thinking skills (higher-order thinking skills), and able to analyze, evaluate, or even interpret digital content.

A review study by Gasser et al. (2012) regarding digital media's effect on youngsters, revealed that assessing the quality of online information is quite challenging for the young generation. Accordingly, researchers point out that the students require some fundamental literacy skills since the information found on the Internet, particularly the quality of online information, has been negatively affected due to structural changes

in the informational landscape. In other words, since the Internet became more interactive and dynamic, that is it had been upgraded to Web 2.0, information found online became more sophisticated. Hence, as researchers continue, online information is no longer reliable as it was in the past, and thus, the young generation must be able to assess and evaluate the new, online information accordingly. Here, it is important to note that, questions regarding the reliability of online information, existed prior to the proliferation of so-called fake news, and thus, digital literacy education has been a subject matter, prior to spreading of the fake news.

Considering that individuals' attention span is narrowing (Lorenz-Spreen et al., 2019), meanwhile amount of information presented online increases exponentially, digital technologies paradoxically, resulted in "non-culpable" and "strategic ignorance" (Bhatt & MacKenzie, 2019). That is, considering the fact that individuals' capacity to process information is limited (Mayer & Moreno, 2003), a limitless amount of information enabled by digital technologies, led to information and cognitive overload; and the information overload has resulted in the formation of a new type of ignorance. The new kind of ignorance can be described as "factual" ignorance, since individuals navigating online, are not aware of what kind of information is true and accurate, and what information is false. Hence, the next generation of ignorance, i.e., unawareness, arising in the New Media age or the Digital Age, might be respected as adverse effects of the expanding Internet, including social media, or in other words, can be referred to as a negative effect of the media bombardment, also known as information bombardment. In this regard, almost all social media users are challenged by the abundance of information, and at times, are being affected by a flood of misinformation, else-called information pollution. In this context, Meel and Vishwakarma (2020), state that the Internet and social media, serve as an open stage for discussion, ideology expression, emotions, and sentiment sharing; and thus, by enabling to do so, turned into 'channels' filled with an unstoppable flow of information. That is, as the authors emphasize, given that the information created online is not required to meet any standards, digital content, deliberately or not, is being created and represented inaccurately in the form of images, blogs, messages, stories, breaking news, and subsequently, the false representations are being propagated on social media, taking the form of information pollution. In addition, as the authors continue, information nowadays is being weaponized for a political end, and thus, false information circulating online, for the most part, is being created and

shared to form a biased user perception. The researchers categorized different formats of information pollution through a Venn diagram as seen in Figure 1.1 below.
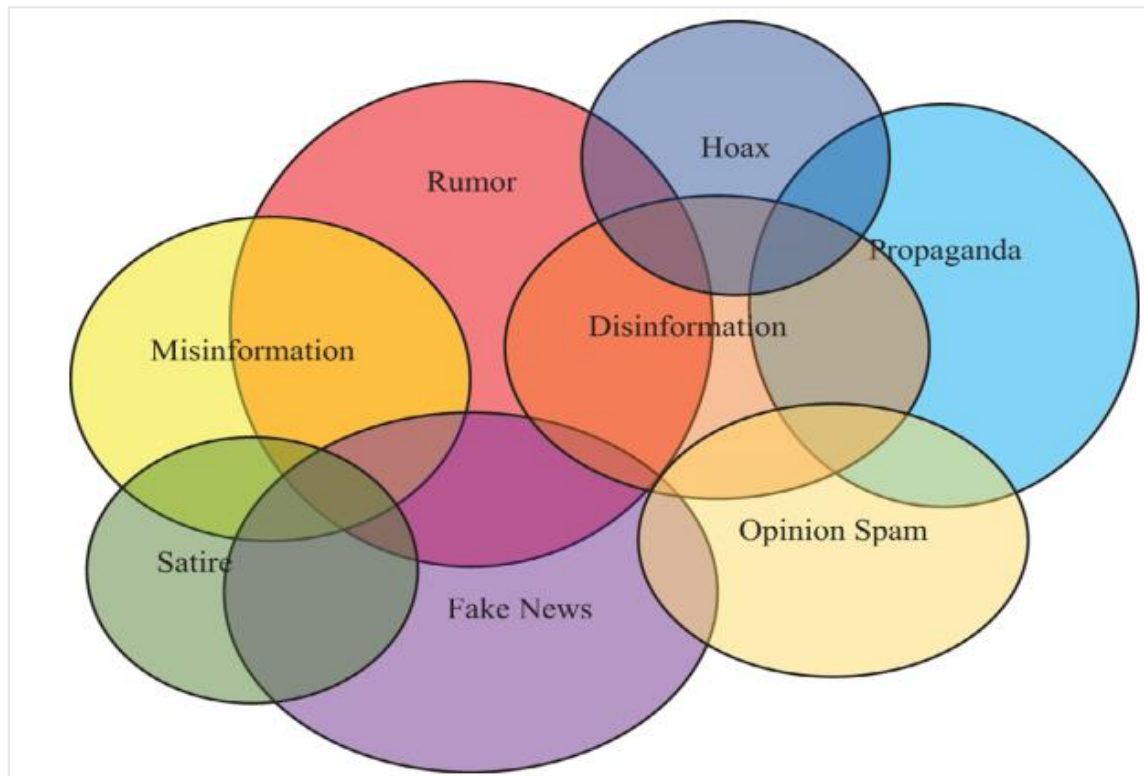
Figure 1.1 *Venn diagram of false information on social media (Meel & Vishwakarma, 2020, p. 4)*

Considering that the information landscape has changed and is changing, educators and specifically those who aim to cultivate media literacy and information literacy should upgrade their knowledge and skills; update their awareness regarding the Internet and social media (i.e., their features) correspondingly. That is, due to the fact that social media platforms and the Internet, functions nothing like old media, media educators should be able to teach digital natives how to navigate online, how to process digital content, and more importantly, teach the young generation how to effectively assess the reliability of the Internet sources. In this context, knowledge, and skills related to assessing online sources of information, i.e., digital content, is directly related to digital literacy (Polizzi, 2020), and thus, information literacy educators as well as 'new' media literacy educators, are expected to cultivate digital literacy competencies in their students; especially considering that the young generation more likely to prefer new media over old media, and new information environment over old, or in other words, would rather prefer digital

libraries, the Internet over print media, i.e., physical items. Hence, teaching on how to locate and verify reliable sources of information, evaluate the quality of the digital content, is a must. Here, it is important to note that the focus of the study, besides delivering students' theoretical knowledge on media literacy, is to enhance their abilities to evaluate digital content; and thus, the study focuses on delivering media literacy education and promoting digital literacy skills, concurrently. The current study is unique in the context of Turkey since the researcher besides providing basic media literacy education for prospective teachers adopts a novel instructional approach, introduces a quite uncommon fact-checking strategy, that arguably, enables users to navigate online, and evaluate digital content effectively. The approach refined and promoted by Stanford University researchers is known as "lateral reading"-a strategy also referred to as professional fact-checkers strategy (McGrew, 2018). In this context, the very word "to read" in "lateral reading" means to assess the reliability of digital texts by addressing alternative, reliable online sources. That is, to read laterally online, implies, searching for reliable information about the unfamiliar site, dubious online video, or even image. Unlike reading vertically, i.e., reading the whole text, and only then assessing the reliability of the text, lateral reading strategy, do suggests leaving the unfamiliar site, or online video as soon as possible, and seeking to find specific information, facts regarding the content on reliable resources. Moreover, the strategy suggests addressing the "COR" questions amid performing the online search, "(1) "Who is behind the information? (2) What is the evidence for claims? and (3) What do other sources say?".

Several studies reveal that young individuals are unaware of how to evaluate the quality of online sources and what good information sources should look like. (Biddix et al., 2011; Kim & Sin, 2011; Wineburg et al., 2018). Moreover, considering the abovementioned "narrowing attention span" finding, studies found that even university students' information seeking is centered on one simple criterion, and that is, to find a relevant and easily accessible source on the Internet; and then, use that source accordingly (Gasser et al., 2012; Kim & Sin, 2011). In other words, young individuals, as a rule, is not willing to invest time in the search process and thus are very susceptible to believing false information. Accordingly, the "Tik Tok" generation's information-seeking and consuming practices, resemble their fast-food consumption habits, and that is, "the faster the better". As the result of such practice, i.e., young individuals' constant hurry, the quality of online content for young individuals is considered irrelevant, or of secondary

importance. In this context, in a recent review study, Pennycook and Rand (2021, p. 388) found that "poor truth discernment is associated with lack of careful reasoning and relevant knowledge and the use of heuristics such as familiarity ", and thus, introducing effective interventions that could "nudge social media users to think about accuracy" of online content, as well as "leveraging crowdsourced veracity ratings to improve social media ranking algorithms" are seen as an effective solution against the spread of fake news.

Although the digital natives are aware of the fact that it is not difficult to create and disseminate fake content on social media platforms, the majority are still predisposed to trust unreliable, dubious information such as false rumors, hoaxes, and conspiracy theories (Schulten, 2015). Thus, to prevent apparent susceptibility, it is important to cultivate critical thinking skills within media literacy classrooms and promote digital literacy skills among the students immediately; so that the digital natives would be able to assess the quality of online information and evaluate the reliability of online sources later.

Considering the annual figures regarding Internet usage and social media preferences in Turkey, individuals on average spend almost eight hours online, whereat three hours of the time is allocated to social media (Kemp, 2020). Furthermore, according to another annual survey that discloses news consumption habits across the countries, online news resources, including social media, are among the most favored source of news for Turkish citizens (89%), followed by television (77%) and printed media (47%) respectively (Newman et al, 2018). In this context, Facebook is found to be the most popular social media platform in Turkey used for reading and sharing news, and it is followed by YouTube, Twitter, WhatsApp, and Instagram. Furthermore, according to the same survey, the total trust rate for traditional media among the Turkish respondents dropped to 38 percent (Newman et al., 2018). Based on those figures, it is evident that the Internet and social media have become an indispensable reality of Turkish society, where online news sources became further salient. Hence, the quality of online information, news spreading on social media, becomes more important than ever.

According to Reuters Institute Digital News Report 2018 that focuses on news consumption, Turkey is a leading country exposed to fake news, among 37 countries involved in a survey, since 49% of the total respondents from Turkey has stated that they have come across fake news, i.e., misleading news that has been completely made up for

political or commercial reasons (Yanatma, 2018). The same report reveals that social media, and the Internet is the second source of news for Turkish respondents after TV; however, online sources of news is at the top of the list, taking into account the weekly news consumption, with a weekly reach of 87%, followed by TV (77%), printed media (46%), and radio (39%). Furthermore, taking into account the total, 2019 individuals' data for Turkey, the youngest respondents, to a large extent, have the lowest level of trust in news. Additionally, based on the same report data, the survey disclosed that considering the political leaning of the respondents, trust in news is higher on the right (51%) than on the left (29%); whereas the "overall trust (38%) and distrust (40%) in Turkish news media are remarkably similar", and that figures indicate "a very polarized society and news media in the country" (p.20). Accordingly, as the researcher argues, the survey has demonstrated that Turkey is at the center of the 'fake news' issue, particularly, in the light of "decreasing levels of media freedom and increasing political polarization", the factors that are "reflected in the news media" (p.20).

Social media currently is a primary source of information and news for the digital natives (Kim et al., 2014; Nee, 2019), and clearly, the new media is steadily replacing old media, that is, traditional media such as radio, broadcast TV, and print newspapers; particularly considering the young generation and their news, media consumption. Musgrove et al. (2018) in this context, argue that social media has transformed the information landscape and changed the way individuals perceive the news. That is, researchers claim that nowadays, users on social media perceive news as if a tweet and a post that does not need to adhere to any documentation or piece of information regarding the trustworthiness of the source. Based on the argument, pseudo-news spread on social media might be a real problem, especially if this fake news, intended to harm online readers.

Given that the young individuals or so-called digital natives are among the most active and largest group of users on the Internet and social media, in particular, these individuals are more likely to encounter pseudo-news or in other words, fake news. Fake news, in this context, is not just a piece of false information or misinformation, it is deliberately created misleading sociopolitical messages, disseminated online, and on social media particularly. Basically, fake news is disinformation that looks and feels like real news, and yet these messages are spread online on purpose so that the messages can

get viral and reach as many readers as possible; and last but not least, fake news is spread to reach some or other political end.

Unaware of how real news should look like and how "free" social media functions, youngsters using social media are easily exploited by the media. Accordingly, to prevent exploitation, media educators should be able to cultivate critical thinking skills in students, including digital literacy and (new) media literacy competencies. Considering that "the medium is the message" (McLuhan, 1964), whereat "constructed" social media messages shape individuals' perception of reality, all kinds of misleading and manipulative messages online, or in other words, fake news is a real threat.

Fake news is a relatively new phenomenon, closely or even directly associated with the Age of Post-truth Politics. Spreading largely on social media platforms such as Facebook and Twitter, fake news is misleading online messages, pseudo-news created for political ends. Accordingly, fake news is akin to disinformation, and yet, in essence (by feature) fake news is more far-reaching (i.e., viral), since the means, they spread through (i.e., the nature of social media) are different. In this context, the words viral and political are the keywords, since to understand the essence of fake news, one needs to understand that misleading messages (known as disinformation in traditional media); nowadays spread on new media, and therefore, fake news is akin disinformation and yet considering that "the medium is the message", fake news is a brand-new "disinformation", i.e., misleading online messages (pseudo-news). It can be argued that fake news cannot be regarded as mere disinformation since the means, new media vs old media, have altered, i.e., significantly changed. Accordingly, since the means are as important as the content delivered, one should consider the new means, that is, digital technology and the features of the new media, and not just the content. The point here is, educators should be able to explain the peculiarities of the Internet and social media, i.e., what is and how algorithms work, how does algorithmic filtering affect us, etc. In other words, fake news, should not be considered as mere 'newsworthy' fake content or mere disinformation, since fakeness, and the spread, virality, is enabled by digital technologies. That is, to treat the 'virus', in this context, fake news, to know the genome, as well as the habitat of that 'virus', is essential. Besides, since the Internet has enabled the 'venom' to spread, the same technology, i.e., the Internet, paradoxically, also provides antivenom; the only thing left is the know-how to use it, that is, be able to navigate and evaluate online information.

Fake news revealed to have negative effects on democratic elections; provoke violence (Haag and Salam, 2017); induce lynching and communal tension (Bhaskaran et al., 2019; Rai, 2015; Singh, 2017), jeopardize public health systems (Carrieri et al., 2019). To prevent the negative effects of fake news, young individuals (1) should be aware of the phenomenon, (2) aware of how social media works. i.e., functions, (3) be familiar with negative effects of disinformation and fake news, and last but not least (4) should be regarded as savvy consumers of digital content. In other words, digital natives should become (new) media literate, and digitally literate citizens, where being media and digitally literate entails critical thinking skills towards online messages; and in essence, abilities to assess the reliability of online information, assess how trustworthy the news is. That is, to be considered a digitally literate citizen in the New Media Age, students, first of all, should be able to question the credibility of the content they are encountering online. To sum up, being regarded as a savvy consumer of digital content (media, posts, and news) is the first step required to be a digitally literate citizen.

To raise awareness on the phenomenon, that is fake news, media educators should be able to enhance digital literacy and media literacy competencies concurrently, particularly focusing on critical consumption. In other words, teachers and teacher educators should be able to promote competencies that would enhance young individuals to effectively navigate and ultimately evaluate digital content.

According to Spires and Bartlett (2012), digital literacy can be described by taking into account particular cognitive and social processes; and thus, researchers propose to categorize the digital literacy processes as, (a) locating and consuming digital content, (b) creating digital content, and (c) communicating digital content (p.9), where the process of critical evaluation; or so-called "evaluative stance" is a fundamental component within these processes.

Digital literacy and media literacy are closely related or even interrelated concepts (Hobbs, 2019), where both of the literacies share common aspects, and one in particular, the ability to use (i.e., locate) and evaluate information. Moreover, critical analysis of the message (content/text) is central within both concepts. Hobbs (2019) acknowledges digital literacy and media literacy as a united concept, naming the concept as digital and media literacy, and argues that the concept is an expanded conceptualization of literacy where the very word literacy is the sharing of meaning in symbolic form. To illustrate the overlapping competencies of the concept, the researcher compares and contrasts both

concepts (as seen in the figure 1.2) and argues that shared competencies are fundamentally collaborative, critical, and creative.

COMPARE AND CONTRAST DIGITAL AND MEDIA LITERACY

Participates in a collaborative digital knowledge community

Critically analyzes messages to evaluate credibility & quality

Heightened awareness of media use

Uses digital texts, tools & technologies for inquiry learning

Reflects on how media influence attitudes & behaviors

Creates media for self-expression, communication & advocacy

Aware of how digital texts circulate as culture

Aware of interpretation processes at work in the sharing of meaning

Aware of how media constructs representations of ideas, events & people in ways that impact democratic processes

Gains competence and confidence with digital technologies by practicing & self-learning

Balances benefits & risks by using using media content in socially responsible ways

Understands media systems & the political economy of the media

DIGITAL LITERACY

MEDIA LITERACY

Figure 1.2 *Comparing and Contrasting Digital and Media Literacy (Hobbs, 2019)*

As seen in the figure above, digital literacy and media literacy share one particular competency that is in the focus of the current study, and that is a critical analysis of the messages to evaluate credibility and quality. Specifically, the current study aims to assess prospective teachers' abilities to evaluate social media content and further their digital literacy skills, and in particular, abilities that would enhance students to evaluate the credibility of digital content. In other words, in order to fight fake news spreading on social media, the researcher pondering over the fake news issue, has come to realize that academia, has rather only one effective weapon to fight against fake news issues, and that is educating students through qualifying prospective teachers with relevant digital and media literacy knowledge and skills, competencies that will help them to critically analyze social media messages and evaluate the credibility and quality of digital content

and promoting those skills in their future students. To sum up, furthering the shared competency outlined within the figure is the main priority of the study.

Taking into consideration McLuhan (1964) remark that "the medium is the message", digital content, and social media messages, in particular, are quite sophisticated, i.e., tricky than the messages disseminated via traditional media channels, since medium (new media vs old, broadcast media) has changed, once static pages became dynamic online; and for that reason, digital landscape as a source for new (mis)information (for news) turned out to be more complicated, that is, more innovative and disruptive at the same time. In this context, considering McLuhan's remark, disinformation, i.e., fake news, spreading on Web 2.0, i.e., on the internet and social media, can be regarded as Disinformation 2.0, and thus, the new 'variant' is more treacherous compared to the old one. To enable and empower individuals to safely navigate online and be able to assess the quality of online content, those teachers who know how social media functions, how to fact-check are rather important.

That being said, taking into account that "digital literacy" is a more recent and 'up-to-date' concept, a particular concept rather entails media literacy as well. Thus, from this point on, considering that the researcher conducts study at the Faculty of Education with students studying at Computer Education and Instructional Technology (CEIT) department, to call the relevant set of competencies assessed within the current study as digital literacy competencies have been regarded as pragmatic. That is, since the researcher conducts a study in the Faculty of Education and not in The Faculty of Communication Sciences, adhering to a more relevant designation has been accepted as reasonable. Nevertheless, since literacy as a concept transforms together with "society, economy, culture and technology" (OECD, 2019, p. 27); for the young generation called "digital natives" practically living and learning online, calling a relevant set of competencies that would enhance wise consumption of information online as a Digital literacy, or even Internet literacy, New Media Literacy, Information literacy; is not a point of an argument. The point is that so-called digital natives are not literate enough, call that literacy reading literacy, media literacy, or digital literacy; and thus, those students are in need to be instructed properly. Accordingly, students need to grasp the idea behind the new media, social media messages, and thus they need to be able to critically analyze and evaluate online content. Since the target audience of the current study is digital natives, and the object of the study is fake news and social media content, in particular, digital

literacy designation seems like a more relevant concept for the current study. Accordingly, the researcher accepts (new) media literacy as a subset of digital literacy within the context of the study.

OECD (2021) emphasizes that reading in the 21t century "is a key literacy for citizens and societies " (p.19); where the very concept is directly related to "understanding, using and evaluating" all kinds of texts (p.28). Here, reading within digital environments refers to engaging in the meaning-making, or to put simply, understanding the digital content, no matter what type of content would it be, since the very word literacy "has something to do with reading" (p.6), not to mention, with the understanding (Lankshear & Knobel, 2008). Hence, OECD assessing 15-year-old students from almost 80 countries, specifically had focused on reading proficiencies of the students in the PISA 2018 assessment, since reading itself has been transformed and currently reads as "understanding, using, evaluating, reflecting on and engaging with texts in order to achieve one's goals, to develop one's knowledge and potential, and to participate in society" (p.28). That is, reading today includes reading within digital environments, and thus, involves relevant processes such as searching and multiple source comprehension.

According to OECD (2021, p. 36) report, reading within digital environments requires "navigating through multiple sources of text, selecting relevant information and assessing the quality" of those 'texts', i.e.., information. Here, assessing the quality of information as well as navigating are critical components of digital literacy as well as the online reading process since readers "construct" their knowledge through navigation (OECD, 2021, p.28). That is, readers' choices to 'read' a particular piece of information, (whether it be an image, sound, text), the decision-making directly affects their (mis)understanding. Accordingly, to read online proficiently, every student today is expected to effectively navigate through multiple digital sources; and be able to search for and locate relevant information. In this context, Hobbs (2019) argues that digital and media literacy is an expanded conceptualization of literacy where the very literacy nowadays cannot be tied to a particular set of cognitive practices such as mere reading comprehension since reading comprehension is one of the essential competencies that is embedded in digital and media literacy. In other words, reading within the digital environment includes the ability to understand the meaning, where particular competency, is fundamental within the definition of the very word literacy, and thus,

reading literacy is rather a critical component of both concepts, namely digital and media literacy.

OECD (2019) conducting the latest PISA assessment, has tested over half a million students to gauge students' reading proficiencies. The findings of that assessment conducted in 2018, revealed that among almost 7 thousand 15-year-old students in Turkey (represents 73 percent of a total number), only 3 percent of students were evaluated as fluent in reading; that is, only 3 percent of the students reached the highest level in the PISA reading test, whereas the OECD average is 9 percent. In this context, reading fluency refers to students' abilities to *read and understand texts*, including digital ones, with ease and efficiency. Thus, to read fluently, young readers are expected to be as 'natives' or act as 'natives' within digital environments and thus be able to locate specific information online with ease, i.e., navigate effectively within search engines and websites (as seen in figure 1.3).
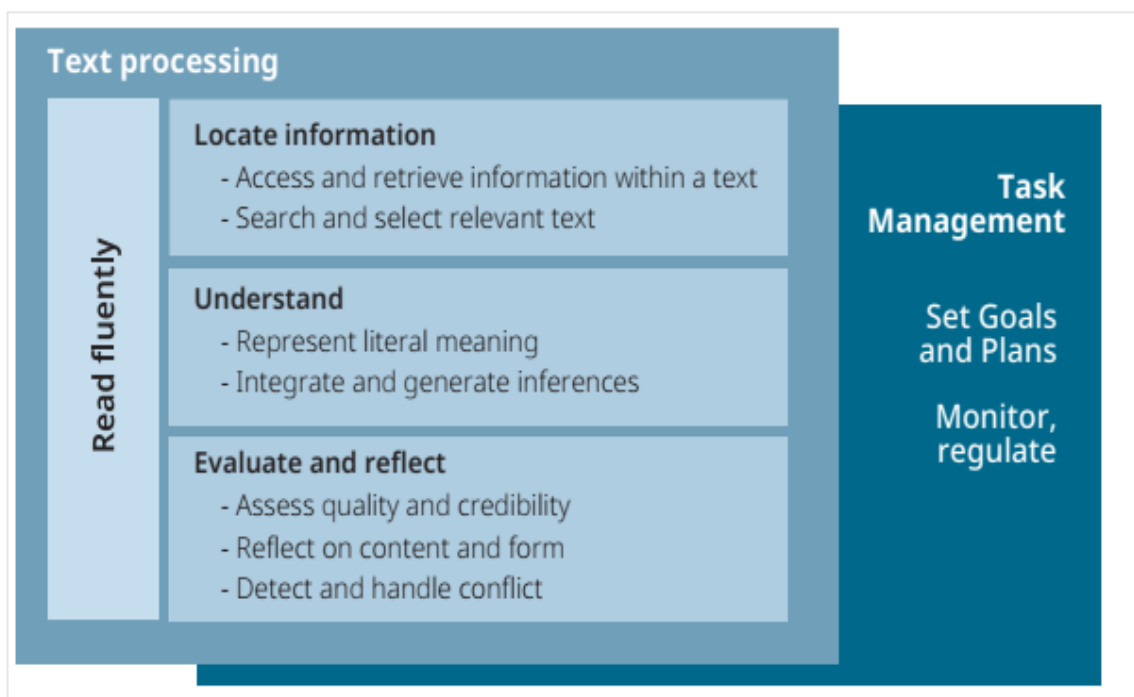
Figure 1.3 *PISA 2018 Reading framework processes (OECD, 2021, p.24)*

Here, reading fluently, within digital environments requires abilities "to judge the relevance, accuracy, and credibility of content, modulate their reading speed and skim through the text until they find the relevant information" (OECD, 2021, p. 24).

Nevertheless, in the light of the findings, the number of those who demonstrated a basic (at least second) level of reading proficiency, is equal to 74 percent of the total students subjected to test in Turkey, whereas the OECD average is 77 percent. Thus, in

general, Turkish students demonstrated below the average results in the PISA 2018 reading assessment (OECD, 2019). In this context, it is important to note that for reading, the focal subject of the 2018 test, all related tasks have been updated accordingly, that is, considering online environments; and thus, the reading tasks were designed to assess student's abilities to read (understand and evaluate) online information as well.

OECD (2021, p.23) points out that reading in the Digital Age is a complex process (as seen in the figure 1.4 above) that requires students to engage with a text by activating cognitive processes, namely, "locating information" (i.e., navigating), "understanding", and "evaluating and reflecting". Besides being engaged in the reading process cognitively, to read fluently, that is easily and efficiently, students within the process concurrently should consider the text (source, organizational and navigational structure, format, and type) and scenarios, i.e., context and purpose for reading. (OECD, 2021, p. 24). In this context, reading within digital environments, to put it simply, refers to 'consuming' online content, since the very word literacy, entails 'reading something' with 'understanding' (Lankshear & Knobel, 2008, p.5); and thus, reading digital content, means, reading the content, i.e., online video, audio, image, text, and understanding it.

Furthermore, OECD (2021, p.20) by issuing "21st-Century Readers: Developing Literacy Skills in a Digital World" report, argue that digital literacy is fundamental for students navigating online, since nowadays "news and social media messages are spread across the globe in a matter of seconds" . Furthermore, authors argue that considering ubiquitous phenomenon known as fake news, students nowadays are required "to learn how to think critically, assess the accuracy of the information on the Internet, and solve problems on their own more than ever" (OECD, 2021, p.20). That is, reading in the 21st century, entails abilities to navigate online efficiently as well as wisely consume all kinds of digital content, including online news.

Based on OECD suggestion, in order to enhance students' awareness regarding fake news, it is crucial to cultivate digital and new media literacy competencies, especially focusing on knowledge and skills related to navigation and critical consumption. In this context, based on Spires and Bartlett's (2012) digital literacy processes pyramid, prior to creating and communicating digital content; to put simply, before creating and sharing digital content, online users must be able to effectively navigate (locate) and evaluate digital content. In other words, to be considered a digitally literate citizen, every individual, before anything else should be appraised as a savvy consumer of digital

content. Here, savvy consumers are those who think before they share and those who possess a "discerning mindset that enhances interaction with an online resource with accuracy" (Spires et al., 2019, p.14). Moreover, considering that currently, we live in an ever-changing digital media world, the responsibility of educators to cultivate young people that are able to think critically, behave safely and participate responsibly, becomes more apparent. OECD (2021, p .24), in this context, comes to a conclusion that nowadays students navigating online, for being regarded as competent readers (i.e., digitally literate), are required to "distinguish between facts and opinions", not to mention to have an ability to "assess the quality and validity of the information critically".

1.3 Aim of the Study

The current mixed-methods study aims to raise awareness of the fake news phenomenon through presenting basic media literacy education and enhancing digital literacy skills. Accordingly, to reach the aim of the study, the researcher designed and administered an integrated online program that consisted of two parts, namely, a) MIL, presentations on basic media literacy subjects including fake news phenomenon, and b) COR, online training aimed to cultivate digital literacy competencies. The training component of the intervention was designed to enhance students' digital literacy competencies concerning the evaluation of digital content. That is, the researcher presenting media literacy subjects prior to training, aimed to assess and enhance students' critical consumption of online media content (news), in unison.

Taking into account that the study aimed to educate and train prospective teachers at the same time, the researcher had designed a comprehensive program that included (a) downloadable presentations on the subject of media and information literacy (MIL theoretical knowledge); and (b) authentic assessments designed to foster prospective teachers' digital literacy skills (COR practice). In other words, the researcher aimed to promote digital literacy skills along with new media literacy competencies in students concurrently. To assess students' relevant skills and competencies, the researcher collected and analyzed both quantitative and qualitative data.

On the one hand, media literacy subjects had been delivered to students considering the "Media and Information Literacy (MIL) Curriculum for Teachers" (Wilson et al, 2014) framework. Suggested by UNESCO, the MIL framework had been considered practical for the current study since among its aims is to equip the teachers with enhanced

28

knowledge to empower future citizens; and impart crucial knowledge about the functions of media and information channels in democratic societies. The researcher has followed the curriculum framework and designed learning materials according to the suggested modules and units. Nevertheless, due to time constraints, only several core modules and basic media literacy subjects were introduced. That is, the researcher presented media literacy subjects taking into account the students' needs and the focal subject of the current study, i.e., fake news. Besides fundamental media and information literacy lessons, presentations related to the fake news phenomenon were introduced within the adapted modules. In total, besides additional learning materials presented within Canvas LMS, the researcher has shared ten downloadable presentations.

On the other hand, the 'COR' training, that is, digital literacy instruction has been delivered via Google Forms. The online instruction that targeted particular digital literacy skills, was designed for prospective teachers, and meant to enhance their abilities to evaluate digital content since fake news is a brand-new phenomenon that spread predominantly online and on social media platforms such as YouTube, Twitter, and Facebook in particular. In other words, online instruction was aimed specifically to further individuals' savvy consumption of online news and other digital content. Here, the digital literacy skills that were meant to be enhanced, had been referred to as civic online reasoning (COR) skills. The 'digital literacy' designation was opted for on purpose since the researcher considering the central phenomenon of the study, i.e., fake news, adapted the COR curriculum assessments and relevant unique approach; where the COR-"civic online reasoning" refers to digital literacy competencies and defined as " the ability to search for, evaluate, and verify social and political information online" (Wineburg et al., 2019, p. 5). In this context, since fake news, a central subject of the study can be described as misleading social and political messages, capable of "jeopardizing democracies that function poorly", especially "when citizens are not well informed or misled" (OECD, 2021, p.20); the COR curriculum materials, and particularly, assessments adapted for formative purposes, i.e., to promote individual learning of the fact-checking approach called 'lateral reading', had been considered as valuable for 'digital citizenship' and worth trying. To elaborate, civic online reasoning (COR), based on Nygren and Guath (2021) argument, is basically a "prescriptive theory" that focuses on three dimensions of fact-checking, namely, sourcing, evidence, and corroboration. That is, in order to evaluate the credibility of online information, one adhering to the lateral reading strategy, should focus

on these three dimensions, and execute the fact-checking strategy just as professional fact-checkers do. In this context, as argued by Nygren and Guath (2021, p. 3), the three dimensions of the lateral reading strategy, that is, (a) analyzing the source, (b) evaluating the evidence, and (c) corroborating claims, can be traced back to the relevant theories proposed in the 1980s on information literacy; and thus, in essence, the three dimensions of lateral reading are closely related to information literacy.

Evaluating social and political information is central to the citizenship curriculum in the UK, and thus, students are being fostered "to explore social and political issues critically and appreciate the role of the media and the press" (Polizzi, 2020, p.2). On the other hand, a relatively similar course is available at the primary school level in Turkey, namely, 'Human Rights, Citizenship and Democracy', that emphasize within the course's outcomes the critical role of the digital competency of the citizens, by specifying that digital (literacy) competence "covers the safe and critical use of information and communication technologies for business, daily life, and communication; and the competence is enabled through basic skills such as accessing and using computers to evaluate, store, produce, present and exchange information, as well as participation and communication in common networks via the Internet " (MEB, 2018, p.5)

According to Nygren and Guath (2021, p.12), the relevant knowledge, skills, and attitudes that are vital for navigating multimodal online information of importance to citizens in critical and productive ways, are referred to as "digital civic literacy". The researchers, defining the concept, based their definition on the ground of the theories, namely, transliteracy and civic online reasoning, as well as the studies conducted with thousands of Swedish students. According to the researchers, evaluating the credibility of the digital news is a challenging task, and only those students who have a "high digital civic literacy", that is, enjoy "subject-specific knowledge and disciplinary knowledge closely related to issues in the news", are one step ahead compared to students with low digital civic literacy, at "knowing where to find credible information and know that texts and images may be manipulated" (Nygren and Guath, 2021, p.12). In other words, given that evaluating the credibility of online sources is a challenging endeavor, previous knowledge, skills, and attitudes affect the ability to discern the quality of online information. Accordingly, enhancing relevant knowledge, skills, and attitudes is vital for fighting the fake news issue. In this context, the "lateral reading" approach introduced within the current study via formative assessments is promoted by SHEG (Stanford

History Education Group) researchers. According to the researchers, a particular approach enhances individuals' competencies to assess the quality of online information (Breakstone et al., 2021). In this context, the fact-checking strategies, that have been introduced to prospective teachers within the intervention, are included in the 'COR curriculum' that provides free lessons and assessments and is available online for free. To elaborate on 'lateral reading', the strategy suggests that online users do not have to waste a time reading a piece of unfamiliar information (source) but rather urge those users to leave that unfamiliar source as soon as possible and start to search about that source on the Internet (e.g., unfamiliar site). In other words, lateral reading, unlike vertical reading strategy more known as checklist methods, e.g., CRAAP, does not offer to read the unfamiliar source (online content), but rather suggests leaving unfamiliar source after a quick review. Moreover, while conducting an online search concerning an unfamiliar site (source), the strategy requires users to find answers for the following questions, "(1) Who's behind it? (2) What is the evidence for its claim? and (3) What do other sources say? ". Hence, these three questions are referred to as cornerstones, competencies of COR (Wineburg et al. 2019, p. 5).

Based on the focus of the study and main aim of the study, the researcher sought to find an answer on whether intervention, course of instruction called "Digital Media Literacy", have a positive effect on prospective teachers' digital literacy skills, referred herein to as "COR skills" and new media literacy competencies. In this context, the COR, Civic Online Reasoning skills, are digital literacy skills that enable individuals to consume digital content wisely.

The current study involved senior students studying at the Department of Computer Education and Instructional Technologies. The study comprised of one group that had been subjected to intervention. Hence, the study conducted as a mixed-method intervention design had involved a one-group pretest-posttest design. In this context, students' self-efficacy on new media literacy and information literacy has been measured before the intervention and after the intervention utilizing two scales namely the New Media Literacy scale (NMLS) and Information Literacy scale (ILSES). Similarly, students' actual competencies in respect to COR skills, i.e., abilities to evaluate digital content, have been assessed through authentic (adapted COR) assessments. In addition, at the end of the study researcher explored students' perceptions regarding the intervention using qualitative methods.

It is therefore tried to answer the following questions:

 1. To what extent do the formative assessments utilized within the "Digital Media Literacy" course affect prospective teachers' abilities to evaluate digital content?

 2. Is there a significant difference in students' new media literacy self-efficacy scores after completing the "Digital Media Literacy" course?

 3. Is there a significant difference in prospective teachers' information literacy self-efficacy scores after completing the "Digital Media Literacy" course?

 4. What are the prospective teachers' reflections on the "Digital Media Literacy" intervention?

1.4 Significance of the Study

According to OECD (2021), digitalization had some "disruptive effects in and on education" since findings of the PISA 2018 reading assessment, has revealed that 15-year-old students' "literacy skills have fallen sharply behind the evolution of the nature of information" (p. 138). That is, since the Internet and social media, where "vast quantities of information available at the click of a button", became an indispensable part of the modern society, the PISA 2018 reading assessment specifically focused on students' present-day reading skills, and results of the assessment revealed that the majority of students struggle to evaluate the quality and validity of different sources, distinguish facts from opinion (p. 138).

OECD (2021) emphasizes that since humanity lives in a "post-truth" era, where "assertions that 'feel right' " are easily "accepted as fact"; in a new era where an abundance of "media content rapidly exhausts people's attention"; and a period of fake news flourishing on social media; the critical reading, and savvy consumption of online information, became a prerequisite (OECD, 2021, p. 138). In other words, nowadays, students' ability to critically evaluate digital content, including social media messages, is more important than ever.

To overcome the evident shortfall, that is, students' lack of critical thinking skills, and limited abilities, i.e., digital literacy skills that enhance to distinguish facts from opinion, the OECD in the recent "21st-Century Readers: Developing Literacy Skills in a Digital World" document (2021), has emphasized the significance of promoting digital

literacy, enhancing critical thinking (higher-order thinking skills), and particularly online reading (i.e., reasoning) skills since the gap in relevant knowledge and competencies, would have a "profound consequences in a world where virality seems sometimes privileged over quality in the distribution of information" (2021, p. 138). In other words, OECD (2021) highlights the importance of enhancing digital literacy skills that would enable students to effectively navigate online and assess the quality of information, not to mention, assessing the validity of digital sources.

Considering that students from Turkey, had scored below the OECD average in PISA 2018 reading assessment (OECD,2019), furthering students' digital literacy skills (including critical reading skills) is not an option but a must; since as OECD (2021, p.139) emphasize, those who knows how to navigate online effectively as well as those "who were taught how to detect biased information" in the past, i.e., assess the quality of information, "were more likely to distinguish fact from opinion" .

As far as the current study aims to enhance prospective teachers' digital literacy skills (in a broad sense), and in particular students' abilities to evaluate digital content, the current study is more than just relevant. Moreover, since the focus of the study is fake news, where the study itself aims to enhance students' critical thinking skills towards digital content, the study practically addresses a set of skills that OECD (2021, p. 138) suggests promoting in students, namely, "abilities to select and assess online information, abilities to evaluate the quality and validity of online sources".

1.5. Scope and Limitations of the Study

The current study has been conducted online during the pandemic with senior students enrolled in Computer Education and Instructional Technology (CEIT) department at Anadolu University. Accordingly, the results of this study are limited to the particular e-learning experiences of the participants. Nevertheless, the study aimed to propound promising results for prospective teachers' digital literacy competencies.

The current study focused on students' learning outcomes concerning digital literacy, new media literacy, and information literacy. Furthermore, the study aimed to investigate participants' perceptions regarding online learning. Since the researcher sought to establish the efficacy and effectiveness of the particular intervention, the study has been conducted as a one-group pretest-posttest design, and therefore effects of the study had been evaluated considering a particular design. Considered as a weak design,

the particular design has lacked the control group, and therefore, the experiment was open to validity threats. To enhance the validity of the study, the researcher has adopted a mixed-method research design, and thus, has collected, analyzed, and integrated both qualitative and quantitative data.

As a result, even though the results are restricted to the particular context, and thus generalization of the findings are rather challenging, online instruction; adapted MIL curriculum framework, particular digital literacy approach, "lateral reading" strategy, the COR assessments, and other learning materials, will certainly shed light on further implementations of digital literacy and media literacy instruction for teacher education programs.

1.6. Definitions of the Terms

Canvas LMS (Learning Management System): The learning management system used within the study. Learning materials had been delivered via Canvas.

Click Restraint- a fact-checking strategy that suggests scanning the full page of the search engine result page before opening any tabs.

COR (Civic Online Reasoning): is the "ability to effectively search for, evaluate, and verify social and political information online" (McGrew et al.,2018, p.166). The COR is a subset of digital and media literacies (Wineburg & McGrew, 2018). According to McGrew et al. (2018), the COR skills, cultivated within the current study, enable individuals navigating online "to make judgments about the reliability of information and to resist drawing conclusions based solely on our own beliefs" (p.169). Nygren and Guath (2021) define civic online reasoning "as a prescriptive theory" that suggests considering three dimensions when evaluating the credibility of online information, namely (a) sourcing, (b) evidence, and (c) corroboration.

Critical Thinking is " a reflective and reasonable thinking that is focused on deciding on what to believe or do" (Ennis. 1985, p. 45); and still as a concept, critical thinking, has multiple meanings, including critical thinking as judgment, skepticism, sensitive readings, and rationality (Moore, 2013).

Digital Literacy is the ability to use digital technology, communication tools or networks to locate, evaluate, use, and create information. Digital literacy includes the ability to read and interpret media, reproduce data and images through digital manipulation, and evaluate and apply new knowledge gained from digital environments (Wilson et al., 2014, p.183).

Lateral Reading is a (COR's) fact-checking strategy that suggests leaving the unfamiliar site almost immediately and opening new tabs across the horizontal axis of the browser, to consult trusted sources from the broader Web. The strategy meant finding the answer to the questions *"(1) Who's behind the information?" (2) What's the evidence? (3) What do other sources say?*" (McGrew et al., 2018). According to the researchers, the particular fact-checking strategy allows evaluating the credibility of online content more quickly and accurately than alternative strategies such as the CRAAP test.

MIL (Media and Information Literacy): MIL as a concept is defined as "essential competencies (knowledge, skills, and attitude) that allow citizens to engage with media and other information providers effectively and develop critical thinking and life-long

learning skills for socializing and becoming active citizens" (Wilson et al., 2014, p. 187). Adapted within the current study "*MIL Curriculum for Teachers*" is a broad and flexible framework designed and suggested by UNESCO for the member states.

SHEG: The Stanford History Education Group. SHEG created a *Civic Online Reasoning* curriculum aimed to help students develop the skills needed to navigate the digital landscape. Curriculum lessons and assessments are governed by *Creative Commons Licenses* and available for free at https://cor.stanford.edu/.

2. REVIEW OF LITERATURE

The current chapter introduces readers to the central phenomenon of the study, Fake News, and provides a detailed explanation of the phenomenon. Furthermore, the chapter introduces interrelated concepts of digital, media, and information literacies, and emphasizes on promoting one broad concept whatsoever; be that a digital or media or even digital media literacy, since every one of these akin concepts, addressing practically identical issues, would certainly raise individuals' relevant knowledge and critical thinking skills that in turn would enhance abilities to discern fake news from real news. At the end of the chapter, the researcher briefly reviews relevant studies on media literacy and fake news.

2.1 Emergence of Fake News Phenomenon.

Following the 2016 presidential election in the USA as well as the "Brexit" referendum in the UK, the Oxford Dictionaries has declared the "post-truth" as the international word of the year, by selecting the compound word among the list indicating the social, cultural, political, economic, and technological trends and events of 2016. Thus, the post-truth as a concept and a term "legitimized" by the dictionary (Berghel,2017), has been defined as an adjective that "denotes circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief" (Flood, A. 2017). Post-truth is widely associated with a particular noun, politics, and thus, commonly used as a phrase post-truth politics. In this context, the key phrase in the definition provided for the post-truth is- the appeal to emotions (i.e., pathos), and thus, persuasion technique, manipulations, propaganda aimed at individuals' emotions, their irrational beliefs. Addressing pathos is a commonly used tactic in politics since appealing to emotions effectively persuades the audience. Nevertheless, political arguments solely based on emotions, are risky for democracies, since unrestricted, abuse of that technique leads to flawed reasoning in voters, aka logical fallacies.

Taking into consideration reasons and features of post-truth politics, Suiter (2016, p. 25), analyzing issues of the year, describes 2016 as the turning point, "a year of the populists", since the liberal world (democracies) being long challenged from the inside and outside, has lost to autocracies, i.e., powerful authoritarian governments; not to mention defeated by anti-liberal fundamentalist movements. Accordingly, as the author

continues, populist extremes of the right and left in the liberal world are steadily flourishing whereas the center is hollowing out.

Extensive use of 'post-truth' during 2016 amid extremely charged sociopolitical discourse is directly related to philosophical ideas of postmodernism and relativism. That is, owing to the philosophies that oppose notions such as absolute truth, logic, and objectivity, unsupported claims, the lies, are easily disguised under the 'relative' and 'subjective' truth. In other words, on the grounds of relativism, the truth, and the facts, within the 'post-truth' politics era, is subjective and thus there are (?) some 'alternative facts'. Nevertheless, the nonsensical phrases arising within the new political era, such as the phrase 'alternative facts', are absurd since by nature those phrases are contradictory. In particular, taking into account the epistemology, Plato makes Socrates reject "radical relativism" by means of reason, and thus makes the philosopher coming to a conclusion for the question, 'Who will be right?' in a situation where "everyone's individual perception is the arbiter of knowledge", and where every individual perceives another to be wrong. In other words, Plato makes Socrates reject 'illogical' relativism by arguing that 'something cannot both be itself and not itself (Caplan, 2017). Even for say if relativism is to be true, considering the current sociopolitical situation, then progressive society should reconsider the foundations of logic and science itself. In this context, the very prefix "post-" within the post-truth stands for "unimportant" or "irrelevant" rather than after and following (Alpay, 2020); thus, the phrase "post-truth politics", as well as alternative facts, not to mention fake news, means that the truth and veracity are irrelevant. Suiter (2016, p. 25), in this regard, states that the answer to the question "what is happening", considering the rise of populism and emergence of post-truth politics in 2016, is complex, and argue that the rise of populism and emergence of the post-truth phenomenon, is " a toxic combination of policy blunders on austerity, war, and globalization coupled with a new hybrid media" not to mention, the effect of " the political system dominated by reality TV, social media and filter bubbles". Hence, based on that argument, social media algorithms creating filter bubbles (Bozdag, 2013), play a role in the rise of populism across the world, as well as the emergence of post-truth politics. In this respect, Alpay (2020) concludes, that now, i.e., in light of post-truth politics, voters, are no longer considering reason, rationality, and critical thinking, i.e., the aspects of modernism, and rather prefer those messages that 'feels right', that is, the messages that mere fit their opinion their beliefs, their prejudice, and by making so, i.e., by making

irrational decisions, those 'unsophisticated' masses, spread unverified information all-around social media, just once again. Suiter (2016), in this context, emphasizes that within the new, "post-truth world", even factual rebuttals are easily ignored by some voters since "facts" are just assertions.

To grasp the brand-new sociopolitical era, one needs to understand that the very notion of truth, in the post-truth politics no longer exists, i.e., the truth is not as objective and absolute as it once was; and therefore, deliberate bending of the facts is acceptable, especially for an ideology that feels right. According to the Oxford dictionaries (2016), the post-truth as a notion is not newly arrived since the concept was first used in a 1992 essay by the late Serbian American playwright Steve Tesich in The Nation magazine, and more than a decade later, the concept reappeared in the book, The Post-truth Era, written by Ralph Keyes in 2004. Similarly, McIntyre (2018, p.14) argues that the post-truth as a concept is not new since it "has deep roots that go back thousands of years., to the evolution of cognitive irrationalities that are shared by liberals and conservatives alike"; and therefore, the belief that the "post-truth" as a distinct concept has arisen in 2016, i.e., with the rise of right-wing populism is not true.

On the other hand, Onis and Kutlay (2020, p. 1), argue that though 'populism', as a term, embraces 'left' and 'right' variants, the recent "rise of illiberal-authoritarian right-wing populist leaders and parties should be studied as a truly global phenomenon" since the 'left' and the 'right' versions of populism, despite the stereotype, are fundamentally different. In this context, populism as a designation and a particular style, in theory, means "appeal to that which is the popular", and yet in essence in the context of modern politics, imply an "appeal to nationalist or base opinion, opinion without social conscience" (Lilleker, 2006). Defining right-wing populists, Onis and Kutlay (2020, p.1) emphasize that even though the populists " project themselves as representatives of 'the people' against a minority of powerful elites", not to mention, argue against the 'corrupted' establishment, "ironically" those right-wing populists "have an intimate connection with powerful business elites". That is, as researchers emphasize although those leaders adopt "a strong rhetoric of anti-elitism", by effectively "combining economic growth and identity politics based on religion and nationalism", their "political projects are also elite-driven" and thus their anti-elite messages are just a "disguise" (p.2). In other words, though right-wing populism involves "apparent contradictions", the authors argue that the rise of the phenomenon includes a "paradox", that deserves attention. In this respect, since

fake news, as a label (Egelhofer & Lecheler, 2019), directly related to Trump phenomenon, and his "management of contradictions through diverting attention", the right-wing populism, fake news, and post-truth, altogether should be considered as interrelated phenomena, and thus to understand fake news, one should be aware of these subject matters. Here, though the statement is open to discussion, the concepts such as post-truth, fake news, and populism, simply could be introduced as 'pseudo' referring to 'as if'; that is, populism, promoting itself as if democracy, in fact, is just a pseudo-democracy, post-truth is just a pseudo-truth and fake news is just a pseudo-news. Nevertheless, to be able to distinguish those 'pseudos', one should really grasp the real concepts, the features of those authentic concepts, that is, news, truth, and democracy. In this context, just as postmodernism has 'de-struct'ed modernism, so does populism nowadays is undermining democracy, the post-truth is eroding the truth, and the fake news is 'devaluing' the news. For that reason, it is vital to clearly differentiate between real and fake, pro and imposter, pretense and reality, counterfeit and original, the objective reality and subjective perceptions, and thus recognize whenever the reality is being bent; and whenever we are being fooled.

As the word of the year announced by Collins Dictionary in 2017, Fake news is closely related to 2016 "post-truth" politics; and therefore, with the rise of populism and ideas of postmodernism. Fake news, in this context, has been defined by the dictionary as "false, often sensational, information disseminated under the guise of news reporting". That is, fake news as pseudo-news can be defined as disinformation 2.0, considering that fake news, as the word pseudo suggests, imitates, or resemble genuine news. Fake news is a broad concept, that includes misleading stories created online, as well as conspiracy theories, for instance, "Pizzagate". The fake story that connected Clinton's campaign to a pedophile ring, has been widely circulating on Web 2.0 platforms, particularly on social media platforms such as Facebook and Twitter, during the 2016 US election campaign.

Fake news as well as post-truth, as stated above, are two interrelated concepts that share a common ground, and that is an imposture. In this context, post-truth politics might be regarded as an umbrella term since the concept includes fake news phenomena. Here, as with the contradictory terms', i.e., the "truth" and "politics" within 'post-truth politics' concept, fake news as a novel phrase to a greater extent is controversial as well since the compound word is an oxymoron. In other words, the particular phrase is paradoxical in

meaning, since fake news as a phrase represents antithetical concepts, namely fiction and facts.

One of the basic issues, i.e., the apparent feature of the current post-truth politics is the fact that ethos and logos, i.e., appeals to the essential qualities (ethic) and logic within the politics, are being disregarded by both the populist leader and his voters (Alpay, 2020), or 'the people'- as populists generally refer to them (Muller, 2016); those alienated, 'feel ignored' expressive voters, who legitimize their "sacred" populist leader, seeing that leader as part of their identity (Suiter, 2016). In this context, Plato in his book Republic emphasizes that democracies are fragile and vulnerable to (populist) demagogy and the demagogues, i.e., modern-day populists, since demagogues misuse democracy by exploiting pathos (appeal to emotion), that is, by playing on people's emotions. Furthermore, as Plato continues, such unchallenged political propaganda embraced and spread by the leader of 'the people', at the end of the day, leads to the situation where the demagogue switches democracy into tyranny, and where a ruler and a rule by 'the people' swiftly degenerates into the manipulative leading. In other words, taking into account the modern populist leaders, the persistent casting of the opponents as 'traitors' by the populists, eventually, undermine democracy, not to mention, the public trust for the rule of law.

Considering the effects of the new sociopolitical era, since veracity is no longer relevant, expertise and experts are no longer acknowledged as well, and what's more, the experts are being mocked, discredited, and attacked by people in power (Harrison and Luckett, 2019). In other words, the real experts are being disregarded and ridiculed, whereat the facts are being brazenly renounced, not to mention that the very notion of the truth is left under a serious assault (Bergstrom and West, 2017).

The proliferation of digital technologies and accessibility of the Internet triggered or rather contributed to the rise of the new sociopolitical era since digital technologies resulted in fading of the boundaries between the truth and pseudo-truth, i.e., had blurred the line between fiction and reality. That is, partly thanks to new media, the effect of a false narrative, misleading stories within the politics have been grandiose, particularly since within the flood of disinformation, a.k.a., information pollution, uninformed and biased individuals, the masses, including "the people" (Muller, 2016), were not capable of distinguishing between the facts and opinions, discern truth and one-sided truth, approve of the real experts instead of pseudo-experts. In this context, in his prominent

book "The true believer" (1951, p.1), Eric Hoffer argues that "religious and nationalist movements are the vehicles of change" and for "the realization of such vast and rapid change" stirring emotions are prerequisite. Hence, the grand rise of post-truth politics and populism, to a certain extent, was enabled by means of social media platforms, as in the case with the Trump phenomenon. That is, since Trump was able to bypass traditional media gatekeepers, and spread his nationalist message via social media platforms such as Twitter and Facebook, he indeed touched those voters who desired changes.

According to McIntyre (2018, p.14), the origins of the post-truth phenomenon "roots in academic debates over the impossibility of objective truth" and thus the arguments that are currently being exploited by post-truth politicians are based on these debates, war of words or rather the war of 'worlds' (reference points) that last for two decades. That is, the author argues that the denial of science and the doubts on topics such as climate change, vaccines, and evolution, are the result of scientific debates that eventually have undermined the authority of science. That is, due to faulty relativist and post-positivist perceptions of reality, the very concept of truth has been reshaped and politicized, and as a result, the 'new' kind of truth is perceived by the society as personal and subjective; the kind of truth that does not need to be supported by facts since it 'feels right', the alternate truth that eventually becomes an 'undisputed' and 'absolute' reality.

The political atmosphere of the 2016 USA presidential elections and Europe and UK's Brexit referendum results brought to light and demonstrated the potential of social media in shaping public opinion. In this regard, the shocking outcomes of these political events restored the interest in disinformation, fake news, and perceived truth in social media environments. In this context, Fake News is not a "brand-new" phenomenon but rather reinforced by the new technologies, reoccurring incidents of extensive manipulations, misrepresentations, and disinformation occurring in mass media throughout history. Thus, media manipulations, that individuals experience today, particularly, on social media, such as utilizing armies of fake accounts alongside fanatics that amplify narratives favorable to a particular political party and demonstrate "alleged" strong support for the (populist and extremist) party, individual or any celebrity, similarly were prevalent during the history of written news and printing press, e.g., pamphlets, magazines, newspapers as well as radio and television era, yet in different forms. As yet, with the advent of the digital media, the process has started once again, but with more potency, the capacity that has a geometric progression, and is called 'virality', the scope

that to some extent, resulted in a 'paradigm shift', the rise of the so-called era of post-truth politics. The post-truth is the time, where actual and "objective reality", i.e., absolute truth is ignored and no longer important since the truth is considered as something subjective, emotional based and abstract. In this context, as McIntyre (2018) explains bending reality so that it would fit the opinion, as well as manipulating information and presenting those facts within a political context that favors one interpretation of truth over another, is accepted as standard within the new era. In other words, post-truth politics can be described as turning a blind eye to evidence and facts within political culture since appealing to emotions, i.e., the feeling of the masses matters more than appeal to logic, and facts. In this regard, according to the Collins Dictionary editorial staff, the mere usage of the term "post-truth" in 2016 had increased by 365% (Flood, A. 2017).

The ubiquitous presence of fake news as a label along with the phenomenon known as "Post Truth politics" is directly related to political affairs and specifically to President Trump. That is while running for president in 2016, Donald Trump, amid economic instability and demographic change (immigration issues), has made a populist appeal to the economic and social insecurities of the American citizens, i.e., those "expressive" voters who " vote as part of their identity, who want to support the team" (Suiter, 2016, p. 26); and by employing a nativist tone, has widely portrayed political opponents as the elite, and labeling the mainstream media as fake news. By impairing public trust in mainstream media, Trump as the populist and his assertion that he invented 'fake news' term had been eventually disproved by Colin's dictionary, reporting that the term started circulating at the beginning of 2000's on US television to denote "false, often sensational, information disseminated under the guise of news reporting" (Flood, A. 2017). The analogous phrase "alternative facts"; is also closely associated with the fake news phenomenon and Trump's presidency, since the phrase had been initially introduced in January 2017 by Donald Trump's assistant Kellyanne Conway to explain (defend) the inconsistency between official figures provided by administration and photographic record (i.e., the fact) of the crowd attending President Trump's inauguration (Corner 2017; McGregor and Park, 2019).

Although in the 'real-world' politics 'there are no morals' and eventually 'the ends justify the means', abolishing the actual reality, objective and absolute (verifiable)' truth' in the future would cause much more damage than the desired instant political "outcome" of the Machiavellian politicians. In this context, history is full of facts when the

unjustified and manipulated information that politicians regarded and accepted as the truth resulted in crises, wars (e.g., the Iraq war), catastrophes, and millions of deaths of innocent people.

Though there is no absolute agreement on the exact formation of the "fake news" since the concept has evolved with society across the different periods of history, Marcus (1993) argue that misinformation, as one of the sub-concepts of fake news, has existed since the evolution of the earliest writing systems (Bhaskaran et.al 2019). In other words, the authors argue that fake news is not a fresh phenomenon but rather the same old technique of misrepresentation, deceit. Notably, misinformation is closely related to fake news since it is accepted as a misperception of information, or specifically "a belief that is not supported by clear evidence and expert opinion", and in its simplest form is defined as "objectively incorrect information" (Tully, Vraga & Bode 2020). Nevertheless, misinformation all alone cannot be defined as fake news since fake news is intentionally misleading and false.

Taking into account the various, and to a certain degree acceptable sub-concepts and designations of the abstract phenomenon of the fake news, historically, at the beginning of the 20th century during the World Wars the term had been widely known as "disinformation"; whereas in the late 19th century during the Spanish-American War the concept circulated under the "yellow journalism" narrative, i.e., a style of news reporting that disregard professionalism and journalistic ethics since priority were given to sensationalism over facts (Capmbell,2001; Crain, 2017; Molina et.al 2019). That is, throughout history, misleading and fake information, disinformation has been frequently used on purpose, to make money, and for scheming political agitation. In other words, 'fake news' has always been there since politicians throughout history thrived on manipulations, misrepresentations, exaggerations, fabrications, and falsehoods, and yet then fake news stories were not as ubiquitous and massive in volume, as nowadays.

The classical example of misinformation, as one of the rather ambiguous and somewhat inappropriate sub-concepts of fake news, dates to 1938. At that time, the radio adaption broadcast of the drama "The War of the Worlds" resulted in mass hysteria. One of the main reasons behind the confusion was that the entertaining broadcast of the radio adaptation describing the Martian invasion mistakenly had been accepted as the truth by thousands of people, and thus reportedly alarmed nearly one million citizens in the USA (Cantril, 2005; Tandoc et al, 2017).

During the current Digital age, revived phenomenon regained its popularity following the political agitation throughout the critical campaigns in the USA, Europe, and the UK. In this regard, 2016 Trump's electoral success puzzled not only American society but also the international community, provoking questions on the effect of social media manipulations and fake news. In this context, Suiter (2016, p. 26) states that Trump as an "outsider", has understood the power of the new media, and used that potential "to devastating effect". The controversial assumption that "social media helped Trump win" has been intensified since that time, i.e., 2016 (Groshek and Koc-Michalska., 2017). Besides, Trump himself in one of the interviews admitted that "Facebook and Twitter helped him win" (McCormick, 2016).

According to columnists, not only social media as a new means but the phenomenon of fake news, resulted in Donald Trump winning (Parkinson 2016; Read 2016; Dewey 2016). That is, deliberately created and disseminated fake news de facto furthered Trump's election. In this regard, Dicker (2016) argument that more than a half of the American population consume news from social media and primarily Facebook, in addition to the data suggesting that "fake news outperformed real news in term of shares, likes, and comments" (Price, 2016), support the above-mentioned assumptions.

Considering the role of social media, popular SNS's such as Facebook and Twitter indeed had been widely used during the political campaigns in the US and UK for assessing public opinions. In this sense, effective utilization of Internet technology, and social media, in particular, served as a brand-new means, unique channels for politicians who realized undiscovered potential, and skillfully reached already massive social media audience by extensively engaging, creating, and disseminating particular political messages and propaganda. Thus, the traditional approach where broadcast, mainstream media played a pivotal role in shaping public opinion progressed towards the more free, democratic social media platforms. As Wardle (2017) argue before the social media era, public opinion had been shaped relying on 'one-to-many' broadcast technologies whereas currently, through social media "trusted peer-to-peer networks", political propaganda directly targets the users "who are more likely to accept and share a particular message." That is, social media platforms serve as interactive and content amplifying areas, politically hyperaggressive domains, and yet functionally rather "new old media channels" that draw and manipulate like-minded individuals' considering their politically extreme views.

Wardle's claim that social media users are responsible for spreading unverified information is supported by Tandoc et al. (2017) who also declare that "social media users seldom verify the information they share especially if the information is considered as popular". Popular information in this context most often is shared if it is already consistent with users' predisposed beliefs and political alignment.

Tandoc et al. (2017) note that the criteria of popularity in social media create a "self-fulfilling cycle" that leads to the diffusion of unverified information. Thus, the more popular content, the more likes and shares it receives. Although the popularity of any content could be easily achieved by "troll armies" or bots (software programs), most social media users had not considered the case. That is, fabricated popularity creates a false impression that provided (shared) information is true. Moreover, considering such features of imitated, "fake" popularity, bots and "troll armies" even nowadays serve as effective propaganda tools, mechanisms of falsification, and fake "simulation" of reality (pro-government or antigovernment) that create, disrupt (sabotage) and dominate political agenda on social media. Ultimately, social media as a means and social media users as distributors accordingly are accounted for and regarded as the key factor and agent (entity) affecting the spreading of the fake news; symbolically triggering the rise and manifestation of the "post-truth (politics)" era.

2.2 Social Media Effect

Following vast attention to the distinct "fake news" phenomenon spreading publicly online and more commonly over social media platforms, several critics called information providers and particularly social media authorities to share responsibility for the dissemination of the false, fake information. Mark Zuckerberg as a CEO of Facebook initially refuted the belief that the fake news circulating on Facebook possibly had any effect on the outcome of the elections by stating that it is a "crazy idea" and "Facebook is not a media company but a social media platform that enables users to connect and share information according to their preferences" (Kokalitcheva, K. 2016; Berghel, 2017).

That is, search engines, as well as SNS's such as Facebook, personalize, i.e., design and filter content and results (e.g., on News Feed), considering the user's provided personal data i.e., typing and clicks. Thus, social media users consume content they search for and "like". In this regard, SNS's as means determining the "favorite" content based

on the provided "personal preference", as well as the social media users, are responsible for the content received on the Feed. In other words, the algorithms behind SNS's consider the user preferences (cookies and other tracking technologies) and thus deliver the content accordingly. Thus, the "personal data" provided to SNS's is constantly being stored and collected, and consequently used for various purposes including financial profit (advertisement) along with personalization of the News Feed. Nevertheless, there are some negative aspects of this rather covert personalization. Each clicking, typing, and liking provided by users on social media platforms make the content more homogeneous. That is, social media users gradually start to consume similarly, and "friendly" content disregarding the "unfavorable" content. Based on the premise, eventually, social media users acquire a tunnel vision i.e., mental myopia (El-Bermawy, M. 2016).

Controversial arguments regarding the role of SNS's and search engines in providing information diversity increased in magnitude since Pariser (2011) published a book arguing that the "personalization algorithms used by online services prioritize, filter and hide information according to the user previous interaction" Bozdag & Van Den Hoven, 2015, p. 249). That is, the Internet and social media as once believed and expected to "will increase the number of available viewpoints, perspectives, ideas, and opinions, actually have decreased information diversity, and thus, has created a serious threat to democracy" (Bozdag & Van Den Hoven, 2015, p. 62). In other words, instead of an era of freedom, society found itself living in an era of manipulation.

The potential dangers of "decreased information diversity" as well as automatically obstructed "democratic online dialogues" have received wide attention in the media, in academia, and industry. The concept related to these "personalized selections", or algorithms behind search engines and social networking platforms "automatically" determining the "favorable" content and leading to such condition is called the "filter bubbles" (Pariser, 2011).

Definition of filter bubbles provided by Pariser (2011) and that reads as, "unique universe of information about users created by Internet filters"; i.e., algorithms that filter, refine and constantly generate theories of who we are and predicts what we will do, and want next, through monitoring the things we do and like on the Internet or to put it simply, as Pariser defined them a "personalized universe of information". The definition suggests that social media users get information based on recommendations, a personalized algorithm (personalization systems) that specifically select 'what is the best for them' and

therefore exclusively shapes the information, and reality users receive. In other words, debatably and yet, algorithmic curation and personalization systems, are seen culpable for 'unintentionally' placing online users in a filter bubble, a bubble of homogenous content that automatically decreases the likelihood of encountering ideologically cross-cutting information, i.e., news content; thus, intensifying ideological and societal polarization. Here, various factors including users' friends' interests, clicks, pages visited, and individual searches automatically decide the type of content users are and will be exposed to in the future. Furthermore, search results filtered and ranked by search engine algorithms such as Page Rank, according to the users' preferences, in fact, decreases the diversity of sources, and viewpoints and thus reinforces confirmation bias. In this regard, Harrison and Luckett (2019) argue that internet users are often unaware of the fact that the "internet appears to be structured" and the search engines algorithms including SNS's are not neutral, and as a result, the Internet algorithms, in fact, narrow the horizons and reinforce unsupported beliefs of the people by encouraging to limit browsing to already accepted opinions (Bhatt and MacKenzie, 2019). In other words, for "confirmation bias" almost all social media users, including those navigating the Internet and searching online, tend to consume news and other digital content, that support their existing belief; and thus, unaware, these individuals (naturally) fail to seek out online sources that would challenge their beliefs. Moreover, as if to exacerbate the cognitive bias, social media platforms, such as Facebook, Twitter, and Instagram, reinforce users' confirmation bias by feeding the users (personalized and customized) stories that they are likely to agree with, further pushing social media users towards the echo chambers of political polarization. In other words, social media platforms and search engines enabled the dissemination of fake news, since "the manner in which these platforms and search engines are programmed, has enabled to offer curated information" to what these online platforms "consider are of users' interests" (Vasu et al., 2018, p. 4). In this context, confirmation bias and other logical fallacies are especially destructive for unaware social media users, since once those who fell prey to fake news, e.g., conspiracy theories, naturally, are captivated by such misleading content and start to seek out similar online messages, and social media posts (claims), by downplaying falsifying information (facts, objective information). In other words, unaware users, due to faulty reasoning (fallacy), ignore challenging information and fall prey to misleading, manipulative online messages. In this respect, Alpay (2020) emphasizes that fallacy, or simply, faulty

reasoning, is the main factor that has triggered the rise of the populist leaders, and post-truth politics, since those 'unaware', who are not able to recognize misleading messages, i.e., unable to see within the message the failure in reasoning which renders populist argument invalid, are easily fall prey to populist's fake messages, misleading assertions; ending up with accepting these kinds of unsound messages, for the messages just 'feel right'. Hence, as the author of the book "The Lie's Politics" (Yalanin Siyaseti) emphasizes, being able to discern fallacies, e.g., falling for 'straw man argument' or 'Secundum quid' arguments in the course of political debates, is critical; for to combat the post-truth politics or politics that is based on lies. In other words, in order to be able to avoid lies, one should be able to recognize fallacies so that he/she can avoid being fooled by them. Here, avoiding, i.e., refraining from blindly believing in misleading political messages, and 'empty' rhetoric spread by the populist leaders, refers to the abilities known as critical thinking, and thus, in the ability to recognize fallacies, and determine whether politician argument is valid (Alpay, 2020).

To prevent the spreading of fake news, Facebook, after the wall of criticism, i.e., assertions that state that social media and search algorithms created and reinforced filter bubbles that in turn has enabled Trump to win, and Britain to exit from EU (Brexit), announced cooperation with "fact-checkers to label and bury fake news and hoaxes on the News Feed" (Heath, A. 2016, p 14). Moreover, Zuckerberg, as CEO of the Facebook company, announced steps to make the spreading of misinformation more difficult, ultimately admitting that Facebook "has a greater responsibility than just building technology that information flows through" and it certainly more than "just a distributor of news" (Heath, A. 2016, p. 14). On the other hand, several independent software designers have developed "diversity enhancing tools", that is, different algorithms and digital tools to break and combat filter bubbles (Bozdag and van den Hoven, 2015).

Studying the role of social media in spreading misinformation, Silverman (2016) reports that the results of the analysis on the dissemination of the news stories during the 2016 presidential election, demonstrate that fake news was more circulated and shared than the real news. Likewise, the author stresses that the fake news generated more engagements on Facebook than established mainstream media such as The Washington Post, CNN, The New York Times true news stories. Moreover, Silverman (2016) argues that those who read fake news stories largely believed in them.

Considering the relative advantages of SNS's such as Facebook and Twitter for politicians, celebrities, and other public figures, social media offered them a more effective and convenient form of communication. By presenting an opportunity to engage in direct dialogue with large and diverse groups of people via posting and commenting, SNS's become perfect mass media where the followers disseminate politicians' or celebrities' messages in the forms of "shares" and "retweets" without even being asked to (Jensen 2017; Ross and Rivers,2018). Thus, social media users become not only the recipients but potential transmitters of the messages. SNS's in this sense become alternative information channels that reach massive audiences by means of online user communities.

The potential of social media to offer political mobilization during protest movements and uprisings such as "Arab Spring", become another major issue in political science. Although social media provide democratic means for the society where traditional media is censored and controlled by the government, the same benefits of social media can be used by anti-democratic, authoritarian, or ultra-nationalist forces (Flew and Iosidifis, 2020). That is, social media is a powerful mechanism, a means that can be used and exploited by both parties: by the government as a propaganda and control tool and by citizens as an alternative channel for communication, especially during sociopolitical impediments (e.g., citizen journalism), including utilization as means (and a powerful tool) for opposing state repression, demand democratization and justice.

On the recent rise of right-wing populist leaders around the globe, e.g., India's Narendra Modi, Britain's Boris Johnson, Brazil's Jair Bolsonaro, and Philippines' Rodrigo Duterte, the rise to prominence of a particular 'political' figure, an eccentric populist in a democratic country regarded as the leader of the free world raised the questions on the functions (or rather malfunctions) of the democracy. That is, Donald Trump's entry to the White House as the 45th U.S. president in light of his nativist and anti-globalist rhetoric has been interpreted as an end of globalization and 'dreams of a borderless world'.

Among the right-wing populists who realized the power of social media during critical political campaigns, Narendra Modi as Indian Prime Minister candidate and Donald Trump as US presidential candidate are considered the most prominent political figures who have been effectively using social media channels for streaming and delivering news and messages to ordinary people. That is, by utilizing populist language

along with the 'right' ideology or specifically nationalist (nativist) agenda, that is by appealing to 'the people' using collective pronouns such as "our" and "we" alongside with exploitation of anti-elitist and anti-immigration rhetoric, namely using the issues of religion, ethnicity, and immigration as an agenda (Schroeder, 2018), two right-wing leaders compelling- 'right' messages, reached its target audience and eventually brought their leaders desired success in elections.

Considering the "desired" effect of social media, during the 2016 USA presidential campaign, Trump as the Republican party candidate, favored and extensively utilized Facebook and Twitter in the political campaigns instead of using traditional media channels. In that context, Trump's somewhat idiosyncratic Twitter use, (people-centric language, in essence, populist rhetoric), to reach the potential audience, eventually sparked controversy and resulted in long debates and questions considering rather "negative" effects of the social media on the democracy and election outcome.

Since Trump enjoyed a greater number of followers on social media than the rival candidate from the Democratic Party-Hillary Clinton, throughout the political rally, Trump taking advantage, systematically utilized SNS's e.g., Facebook and Twitter, in particular, to reach the American audience by spreading to some extent xenophobic, racist, egocentric, and thus politically outrageous messages. That is, one of the most notable features of Trump's messages during the 2016 presidential campaign was exceptional and rather politically atypical tweets that came directly from him. Unmediated by advisers or other campaign staff, an unconventional approach adopted by Trump, has continued since then (Enli 2017; Ross and Rivers 2018) and thus attracted large attention among researchers. According to the researches, the unofficial language utilized by Trump in his tweets, stems from a particular strategy, namely, to be accepted as 'genuine' by ordinary people and thus perceived as a more sincere, intimate, and personal leadership.

Considering the mechanisms, behind the dissemination of the fake content, there is several actors and factors including:

1. gullible social media users, those who share the information without verification. That is social media users who rather unintentionally participate in the dissemination of fake news.
2. groups (social media fake accounts) deliberately attempting to influence public opinion. That is malicious social media users, creators, and disseminators of the fake information that carry out the malign activity- process on purpose.

3. bot networks and troll factories serving as a part of sophisticated disinformation campaigns. That is, fake news is generated and spread on purpose. (In some instances, such networks might be controlled by pro-government or anti-government bodies); and

4. journalists who struggle to report swiftly information emerging on the social web in real-time (Wardle, 2017, p 5).

Thus, the problem considering the spread of the disinformation stems from various agents, subjects, motives, and contexts. In this context, Molina et al. (2019) identified that categorically online news content operates under 4 domains, namely, message, source, structure, and network; and thus, considering these four domains might enhance the identification and verification of the fake news and the following dissociation from the real ones.

Regarding the effects of fake news on the audience, fake news is found to negatively affect the socio-political realm as well as the psychological, cognitive state of individuals. In that sense, fake news presents a real threat to democracy since fake news, and specifically, conspiracy theories and disinformation eventually undermines public trust in democratic institutions. That is, voters exposed to fake news, i.e., fake messages spread by populists gradually develop a distrust, naïve skepticism towards established institutions, for instance, justice, free press, and national constitutions. Considering the side effects of disinformation, people exposed to fake news are found to be accountable for several incidents such as lynching and communal tension in India (Rai, 2015; Singh, 2017; Bhaskaran et al, 2019). Thus, the "availability of digital technologies contributed to new forms of physical and virtual violence" (Banaji et al., 2019); truly creating life-threatening situations. Furthermore, fake news spreading on social media resulted in a widespread vaccine hesitancy among parents, threatening the health of millions of children around the globe (Carrieri et al.2019). In this regard, conspiracy theories as one of the sub-concepts of misinformation affect public opinion regarding the medical field, political communication, and psychology (Craft et al. 2017). Assuming that the conspiracy theories spread on social media such kind of content can be considered as fake news. In this regard, the Pizzagate affair is one of the most widespread fake news (hoaxes) that had flooded social media during the US presidential election. However, eventually, this fake news was labeled as a conspiracy theory (Silverman, 2016; Berghel, 2017).

Fake information, directly and indirectly, affects individuals' cognitive and psychological domains, i.e., affect heuristics and thus reasonings and actions. Since fake news generally carries emotionally charged messages, such type of information directly

influences an individual's mental state (judgment heuristics) and eventually decisions. In this context, Rapp and Salovich (2018, p.232) confirm that "exposure to inaccurate information leads to confusion about what is true, doubt about accurate understandings, and subsequent reliance on falsehoods". That is, individuals, become more suspicious, paranoid, and extremely skeptical about everything they come across and as a result, ironically, tend to believe in falsehoods. In such cases, biased people that are drowned in an excess amount of information or news content, start to follow like-minded sources of information whether its mainstream media source or friend from the social media and thus ignoring mentally challenging "unpleasant" information coming from diverse sources and that seems and sounds unplausible (to their view); and what is more, those people easily dismiss the source providing unpleasant information and the news as "the fake news".

The report published by Oxford University on social media manipulations, reveals that the false information and propaganda spreading online has become an international problem. Government agencies' "information war" tactics, as well as influence operations, consider using and spreading the disinformation against opponent states especially in critical times like political and financial crises, depressions, elections, natural disasters, etc. In this context, Lee (2018) views propaganda as the "biggest threat" for propaganda is used for spreading misleading information for political purposes.

Fake information nowadays is used as a "digital weapon", i.e., used for a disinformation campaign that targets the social disturbance of the opponent state from the inside. Social media platforms such as Facebook and Twitter in that case serve as a "trojan horse" that arouses, deceives, and misleads excited voters. In this regard, the Oxford University report states that "manipulation of public opinion over social media platforms has emerged as a critical threat to public life", since online manipulations lead to "ethnic tensions, revived nationalistic movements, intensified political conflict, and political crises" all around the globe (Bradshaw and Howard, 2018).

Furthermore, the Oxford University research verifies that fake news is weakening public trust in journalism, democratic institutions, and electoral outcomes. Accordingly, fake information became an actual problem that undermines long-established democratic institutions including ethical-professional journalism and belief in democracy worldwide on many occasions. In this context, Nee (2019) found that the social media news use among global teens and young adults demonstrate that in the post-truth era "private

messaging apps are being extensively used to spread and discuss news stories" that might be unreliable and false in quality and thus have a potential to be "threatening to democracy".

Although the fake news phenomenon is largely considered as "heavily western-centric" (Bhaskaran et.al, 2019), it is certainly a ubiquitous phenomenon that is observable all around the world (Bradshaw and Howard, 2018; Fisher 2019). The proliferation of smartphones and the Internet led fake news to reach culturally diverse populations. For instance, in India, the dissemination of fake news among the gullible and illiterate social media users in rural areas "who consider the credibility of social media the same as the mainstream media", resulted in violence and deaths in several cases (Bassi and Sengupta, 2018; Bhaskaran et al, 2019; Banaji et al, 2019). That is, fake information spreading over social media affects not only those exposed to them but in some cases, it affects innocent, unsuspicious people targeted purposefully or unintentionally; yet in some cases, such actions result in brutal and fatal consequences.

2.3 Defining Fake News

Prior to the 2016 US presidential elections, the term fake news was associated primarily with comedic, satirical reactions to political events and is commonly referred to as satire (Ross and Rivers, 2017; Marchi 2012). American satirical shows and publications such as Jon Stewart's "The Daily Show", Stephen Colbert's "The Colbert Report" and The Onion News Network are some of the examples associated with this literal perception of fake news. The objective behind these shows is to entertain society by using humor, irony, and exaggeration as well as public ridicule and criticize political events and actors rather than informing or deceiving society.

The further clarification of the concept reveals that the phenomenon "has a legacy reaching back centuries, however, the concept shifted its meaning in the past decade" (Tandoc et al.2018). Thus, the fabrication and manipulation of the information is not a new notion and throughout history, these kinds of affairs have been known under different terms. In this regard, Berghel (2017), concludes that "fake news has been with us as long as there has been news". That is, considering the etymology of the word "news", and thus, news emergence as the plural form of the word "new" in the late 14th century, meaning a piece of information; a report of a recent event; intelligence; based on Berghel (2017) argument, fake news has been with us at least for six hundred years.

The common element found across the different definitions of fake news is that it "practically seems and feels like real news" (Tandoc et al.2018;). In this context, the actual definition of the word-fake in Cambridge Dictionary as "not real but made to look or seem real" precisely describe the nature of such news.

The phenomenon of fake news changed the way news is represented and thus perceived by ordinary people. In this regard, Tandoc et al. (2018) claim that "by imitating news' omnipresence and by utilizing news bots", fake news "undermine journalism's legitimacy in social media environments". Thus, the very definition of journalism and the news undergo a serious challenge in the digital age. Professional-ethical journalism, once striving for features such as accuracy, responsibility, objectivity, and truth including factors such as political independence, fairness, and impartiality, nowadays completely losing the ground. Moreover, once considered a valuable profession, journalism is being extensively undermined by those, who fear to face the truth, e.g., populist leaders, and deliberately assault the journalists by improperly "branding" the profession. Likewise, considering neo-liberal reforms, journalism -once an ethical profession alongside many others (including education), has become driven by the market economy and thus currently "grounded on commercial priority rather than professional norms like consequence neutrality, or ethical considerations, such as fairness" (Peters et al., 2018, p.9).

In the current Digital Age or Age of Information and Media, the news is no longer a commodity that is being produced and shaped solely by professional journalists. Accordingly, monopoly of corporate media (empires) speaking on behalf of special interest, as well as formally or informally controlled and thus broadly biased state-sponsored media outlets (particularly in authoritarian regimes) that constantly force editorial censorship, are losing the niche, that is, are losing and somewhere lost the exclusive authority to dominate and influence agenda and as a result of "professional" journalism gradually become more and more ineffective and obsolete. In other words, an exclusive privilege, a power to control the minds or rather "shape individual perceptions", a dominance that had enabled to produce "all kinds of" news, of the long-established media "elites"- business magnates, conglomerates, or even state-sponsored and state-controlled media channels (companies) is weakening due to alternative, free social media platforms. Although considering the current exploitation, misuse of the democracy and the democratic means, that produced plenty of fresh opportunists, fake "experts" such as

populists with promising yet fake rhetoric, not to mention the omnipresent fake news, the lost monopoly-that is the diminishment (depreciation) of democratic institutions including "ethical" media, somewhat caused more a retrogress of the democracies rather than progress. On the other hand, with the emergence of alternative media platforms, the new communication and distribution channels, that is social media networks, the "modern" part of the society- or namely enlightened, informed individuals, acquired an opportunity to shape the real agenda, raise awareness on delicate subjects and to decide "what really matters", instead of "feeding on what is given."

Succeeding the grand rise of populism in the last decade, being an unethical political stance-the modern-day populism appealing to emotions and concerns has reshuffled established sociopolitical context creating a more anarchical and rather insidious physical and online habitat where unaware citizens, and almost all social media users systematically and deliberately are being misled, manipulated through hypocritical messages and fake news. That is, gullible social media users are being 'baited' and tricked by 'postmodern' opportunists with fake, pretend images. Constantly working on, creating appealing images, opportunists utilize scheming, "sensational" messages coupled with cheap and fake demagogy, and pretend to be one of 'the people', and yet living in big 'castles', always pursuing purely Machiavellian motives, these personas relentlessly and routinely bombarding the fragile emotions of the people, striving to deceit and secure specific benefits-financial gains.

Considering the dissemination of the news on social media platforms, individual freedom of expression alongside the speed, "virality" of the content can be considered as the greatest advantages and disadvantages of social media. That is, to consume news individuals, who have access to the Internet, do not have to wait for mainstream media outlets such as television channels, newspapers, or radio broadcasts. News stories on social media are reported, shared on spot, and thus might go viral within minutes. Here, going viral on the Internet implies that the content received numerous engagement rates, shares, retweets in a very short span of time. Although the quality of information or online content is not necessarily reliable, social media users tend to believe in "trending" news confiding in the popularity and virality (circulation) of the content. Thus, a vicious circle is being created based on assumptions. As a result, overlooking reliability, simply popular, "trending" and viral content draw more and more engagement and eventual dissemination. Although the mechanisms behind going viral are uncertain, the audience,

as a rule, tends to believe in viral social media news. In this regard, considering the criterion, the news bots or social media bots are referred to as "computer software that is created to automate a task" to "amplify the volume information since high volume equals more believability" (Musgrove et al. 2018) might be utilized by some parties to entrap those who tend to believe, read such kind of pseudo-informative content.

Although there is no single agreed definition for the fake news phenomenon due to its multiple meanings, as seen in Table 2.1 below that reviews related definitions on the term (by Egelhofer & Lecheler, 2019, p.99); fake news as a concept is commonly defined as "misleading news articles that are intentionally and verifiably false" (Allcott and Gentzkow, 2017). Thus, according to the abovementioned definition, to consider any piece of information as a fake, the intention of the designer, the motive, i.e., the purpose of the fabricator should be taken into consideration. That is, any piece of online information intended to mislead readers, according to the definition, is considered fake news.

Table 2.1 Overview of characteristics in fake news definitions (Egelhofer & Lecheler, 2019, p.99)

Authors/Source	Definition
Allcott and Gentzkow (2017, p. 213)	We define "fake news" to be news articles that are intentionally and verifiably false and could mislead readers.'
Bakir and McStay (2018, p. 154)	'we define fake news as either wholly false or containing deliberately misleading elements incorporated within its content or context.'
DiFranzo and Gloria-Garcia (2017, p. 34)	'Fake news is a (…) term for false news stories that are packaged and published as if they were genuine.'
Guess et al. (2018, pp. 1–2)	'a new form of political misinformation that features prominently in journalistic accounts of the 2016 U.S. presidential election'
Horne and Adalı (2017, p. 1)	an underlying assumption in fake news discussion is that it is written to look like real news, fooling the reader (…). Fake news in contrast has the intention to deceive, making the reader believe it is correct.'
Lazer et al. (2017, p. 4)	Here we define fake news as misinformation that has the trappings of traditional news media, with the presumed associated editorial processes'
Lazer et al. (2018, p. 1094)	'We define "fake news" to be fabricated information that mimics news media content in form but not in organizational process or intent. (…) we view the defining element of fake news to be the intent and processes of the publisher.
McNair (2017, p. 38)	Intentional disinformation (invention or falsification of known facts) for political and/or commercial purposes, presented as real news.
Mustafaraj and Metaxas (2017, p. 2)	The term "fake news" refers to lies presented as news, that is, falsehoods online formatted and circulated in such a way that a reader might mistake them for legitimate news articles.'
Nelson and Taneja (2018, p.3721)	'Now, the term more commonly refers to false or misleading information made to look like a factbased news story'
Pennycook and Rand (2017, p. 2)	'fabricated stories presented as if from legitimate sources

Table 2.1 (Continued) Overview of characteristics in fake news definitions (Egelhofer & Lecheler, 2019)

Tandoc et al. (2018, pp. 147–148)	'Fake news (…) takes on some form of credibility by trying to appear like real news (…)'current definitions seem to focus (…) on fabrications that are low in facticity and high in the immediate intention to deceive.'

As seen from the definitions above, the common characteristics shared by fake news as a genre relates to all sorts of false online content that has at least one of these features, namely either (a) 'low in facticity', (b) spread in 'journalistic format' and (c) designed 'to deceive' (Egelhofer & Lecheler, 2019).

According to Meel and Vishwakarma (2020, p.5), fake news is (a) false information "usually spread through news outlets or internet"; (b) dis/misinformation "disguised as authentic news"; (c) disseminated for political or financial gain, to "increase readership" and last but not least, (d) to form "biased public opinion". That is, as the researchers conclude, the fake news, is being created and subsequently spread "to damage an agency, entity, or person or gain financial/political profit"; or in other words, information as a tool, "is being weaponized to fulfil the malicious motives" and for shaping "biased user perception" (Meel &Vishwakarma, 2020, p.1).

Scrutinizing the news articles with political implications, Allcott and Gentzkow (2017, p.218) conclude that the statements in polarized fake news lack evidence appeal to emotion and preexisting attitudes targeting "the users that tend to judge the quality of content based on previous experiences and prefer confirmatory reporting as it provides psychological utility". In other words, in the current post-truth era, fake news as unverified information messages, are meant for biased people who are more predisposed to emotional rationalization. In this regard, behavioral science has demonstrated that there are several psychological factors affecting people's accurate evaluation of informational content. For instance, cognitive biases such as familiarity of the content, anchoring effect, availability heuristic, and confirmation bias are all involved in the process of evaluation of the new information (Musgrove et al. 2018), and thence biases, i.e., individual's errors in thinking should be taken into account by parties for the validation of the news content. Confirmation bias in this sense is one the "most important heuristic issue to consider" since it is in peoples' nature to "believe in information that reinforces existing beliefs" (Musgrove et al. 2018).

Considering that correcting false and biased perceptions is challenging (Nygren & Guath, 2021), even when individuals come to realize that they have been misled by fake

news (Roets, 2017), taking into account individuals flawed heuristics, including the effect of confirmation bias, is essential, whenever designing media literacy interventions since "accurate information is a pivotal part of democracy" (Nygren & Guath, 2021, p. 2). In other words, since fake news affects individuals' conscious and unconscious states, often through conveying emotion-stirring and provoking messages (Zhang et al., 2021), i.e., emotion-loaded fake messages that aim to reshape people's perceptions (Meel & Vishwakarma, 2019), individuals' 'natural' biases, people's predispositions should be considered for the media literacy interventions. In this respect, review research by Vicol (2020), examining people predisposition to believe and share misinformation, disclosed that "individuals of all ages are prone to believe information when it is repeated (repetition effect), easy to process (illusory truth effect) and when it aligns with the prior attitudes and world views (motivated reasoning)". Based on the argument, to some extent, every single social media user exposed to fake news, occasionally may fall prey to believing such kind of misleading content. Hence, individual's judgmental heuristics, individuals' "mental shortcuts" that allow to solve problems and make judgments quickly and efficiently, should be introduced within future interventions considering fake news as a subject matter, since social media users, scrolling all kinds of posts online, naturally uses heuristics, the heuristics that lead to cognitive biases, and the cognitive biases, in turn, lead to irrational and false decisions. That is, as Vicol (2020) argues, educating people and raising awareness on the subject, i.e., introducing students to how heuristics work and the potential biases they bring in, might be a remedy for fighting misinformation, since raising awareness on the subject, to some extent, might reduce the negative effect of the faulty decision-making process and thus might prevent individuals' further use and dissemination of misinformation.

The controversial phenomenon, fake news, is commonly observed as a cluster concept (Meel & Vishwakarma, 2019). Depending on the different theoretical and operational interpretations fake news is associated with various terms such as misinformation, disinformation, alternative facts, and false news. For instance, Dicker (2016) categorizes online fake news as satire, hoaxes, and propaganda. Hence, being a subject of numerous analyses, fake news rather represents an umbrella concept for different designations (Molina et.al 2019).

Journalists and professional journalism are among the most affected by the negative consequences of the post-truth era. In this context, Peters et al. (2018) specify

that "truth and accuracy" are the fundamentals of the journalistic profession and the true "journalism produces factual material and establishes views that become components of a social debate that affects public policy" (p.116); and yet, owing to populists (e.g. Trump), true journalists who once were regarded as "both agent and effect of the system of dissemination of information" since they served as "investigators struggling to find out the truth regarding events, and communicator involved in the discussion", is under attack, whereat journalism as a profession is undergoing severe transformations within the new political era.

Wardle's (2017) distinction indicates that fake news can be classified into different types of "misinformation" and "disinformation" (Figure 2.1), where misinformation is denoted as the "inadvertent sharing of false information" and the disinformation is the "deliberate creation and sharing of information known to be false" (p.3). Based on a particular typology, fake news can be characterized as both harmful and false; and thus, fabricated, manipulated and imposter contents, including content presented within the false context, can be defined as fake news. Hence, fake news as a sort of disinformation is situated between misinformation and malinformation.
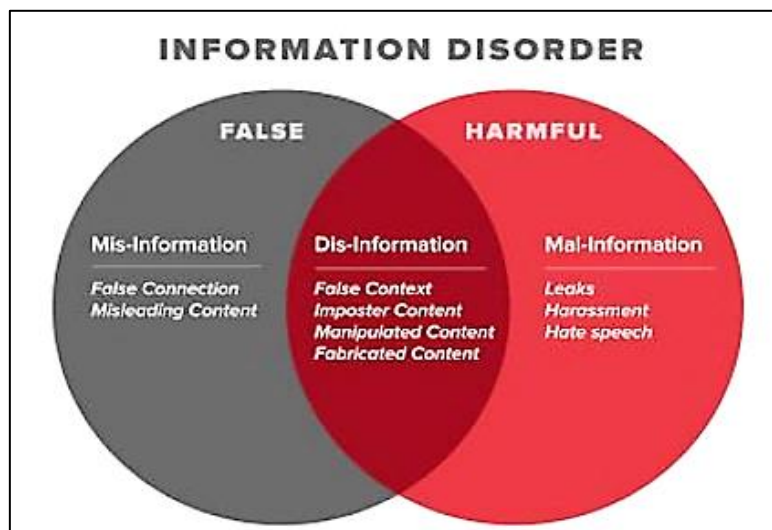
Figure 2.1 *Information Disorder (Wardle, 2017)*

Wardle (2017) based her typology on the degree of intention to deceive, and thus, as seen in the figure below (figure 2.2), Wardle's typology incorporates 7 different labels namely: *satire/parody, false connection, misleading content, false context, imposter content, manipulated content, and fabricated content*.
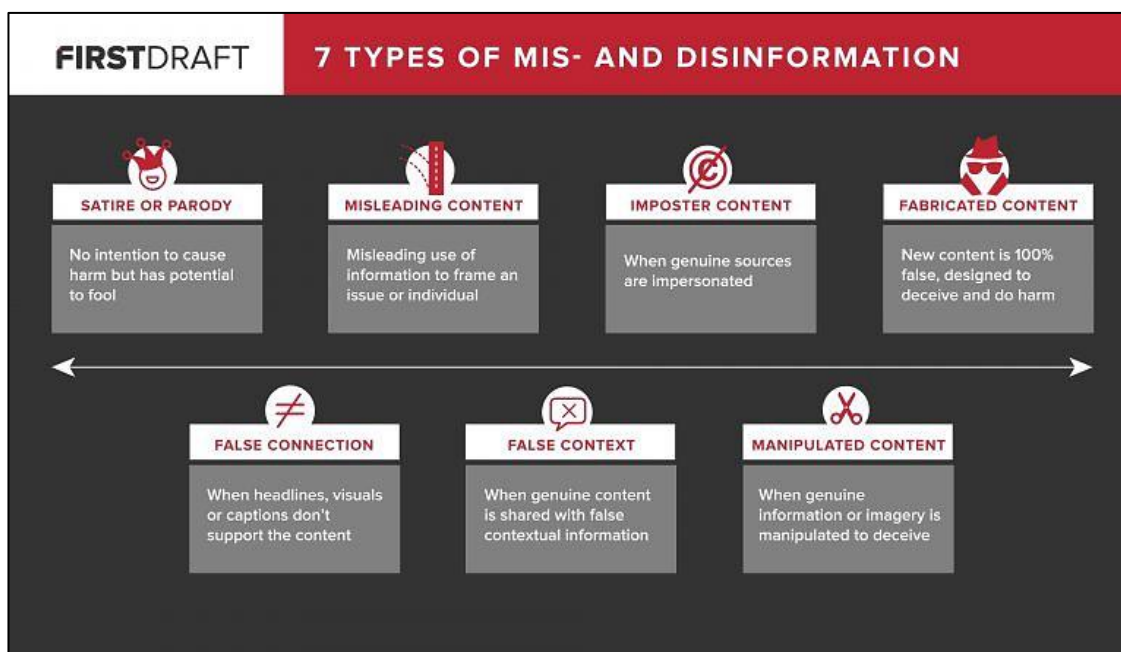
Figure 2.2. *7 Types of Mis-and Dis-Information (Wardle, 2017)*

Based on Wardle's (2017) typology, Bakir and McStay (2017, p. 154) define fake news as online news stories that are "either wholly false or containing deliberately misleading elements incorporated within its content or context". Additionally, authors argue that nowadays fake stories, that is inaccurate information and unreliable online sources are easily accepted as a reality by the unaware public.

Since fake news is a multifaceted phenomenon, Vasu et al. (2018, p.5) argue that fake news should be viewed as a "range of phenomena", and accordingly, authors propose to examine fake news not just as a phenomenon but a "medium for a spectrum of phenomena" that embraces five categories: namely, disinformation, misinformation, falsehoods, entertainment, and misinformation.

To elaborate on the difference between the categories, below, in figure 2.3, the researcher outlines the definitions of those five categories (see Figure 2.3).
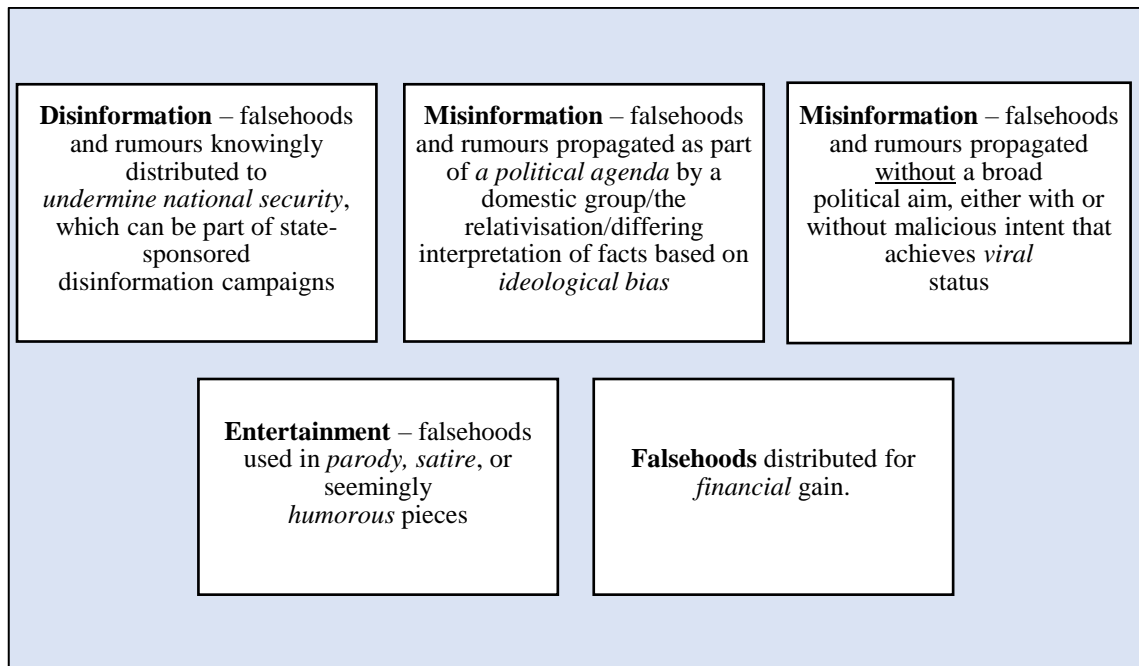
Figure 2.3 Unpacking fake news. Fake news categories according to Vasu et al. (2018).

The typology developed by Tandoc, Li, and Ling (2018) further aim to enhance the understanding of the "fake news" concept, based on two aspects: facticity and intention to deceive. Here, facticity within the typology implies the quality, degree of being a fact, accuracy of the information; and intention deceive indicates the extent of deceit. Scrutinizing the motivation behind the production and circulation of fake news, Tandoc, et al. (2018) conclude that factors are either ideological or financial. That is, ideological belief or financial gain of the parties might be considered as a possible rationalization for the production and circulation of the fake content. In this regard, financial profit for producers of fake news is directly or indirectly related to the level of engagement content creates; thus, more likes, more shares, and more clicks drive more revenue due to advertising. That is, disregarding ideological views only financial gain may encourage creating fake content. In this regard, online hoaxes described as "fake news stories that are intended to generate web traffic and meant to mislead people without having political motivation" (Lee, 2018) are the best example of such intention. On the other hand, fake news production might also be financed by parties who are interested in discrediting the opponents. In this case, fabricated information serves as a "weapon" that is being produced and disseminated under the political or ideological motives of the benefactors combined with the financial profit of creators. In this regard, Aufderhedie's

(1993) argument that "the media have political, ideological and commercial motivations and implications" (p.3) supports the abovementioned conclusion of Tandoc et al. (2018).

Wardle's (2017) analysis behind the reasons for creating the fake news, lead author to specify the seven "P's", i.e., motivations for creating fake content namely: Poor Journalism, Parody, to Provoke or 'Punk', Passion, Partisanship, Profit, Political Influence or Power, and Propaganda. Thus, the researcher argues that the roots of the fake content might be more than just financial or political.

According to Meel and Vishwakarma (2020), users' interaction on social media turned up to be the source of information pollution since users, sharing informative content, might not be aware that the content is false, and thus, due to unawareness, i.e., unintentionally by mistake and sometimes on purpose, i.e., intentionally with a predefined motive, users, as well as the other agents, creating and sharing false content, such as social bots, cyborg users, activist or political organizations, state-sponsored trolls, conspiracy theorists, trolls, etc. serve as a source of misinformation and disinformation. Considering the motivation for spreading false information, the researchers listed the motives with the description, seen in Table 2.2 below.

Table 2.2 *Motivation for spreading false information (Meel & Vishwakarma, 2020, p.5)*

Motive	Description
Political Intent	to malign the public image of the opponent or promote a person or party
Financial Profit	False-positive information triggers the motivation for large-scale investments and affects stock prices. Fake ratings and reviews of products are intentionally written to increase sales
Passion for promoting an ideology	A considerable number of people are impassioned about a particular organization, ideology, person or philosophy and they want to spread it by any means
Fun	For amusement and fun, satirical sites write humorous content that is often mistaken for real news. This is the least severe motive, which does not have many harmful effects because intentions are not usually wrong.
Increase customer base	In the era of Internet-based journalism, online news media is rushing to secure readership and increase customer base. Thus, publishing the stories of questionable integrity and content in the process to lure readers to their websites and platforms

Table 2.2 (Continued) *Motivation for spreading false information*

Rush to cover the latest news	In a competition to be the first to cover the story, journalists often publish articles without fact-checking and get millions and millions of views. Truth and veracity become liabilities in the current online journalism with aims to" Publish first, correct if necessary"
Generate advertising revenues	Fake news creators have earned a sizable profit from automated advertising engines like AppNexus, Facebook Ads and Google AdSense (Reilly, 2018) during the 2016 US presidential elections. Earning capital through false advertising news is a significant driving force that an entire cottage industry of practitioners has indulged in this controversial endeavor
Technological Reasons	Algorithms are structured to endorse things based on popularity, not accuracy (Reilly, 2018), Echo chambers and filter bubbles in search engines (Mohseni, Ragan, & Hu, 2019) are some of the algorithmic flows accounts for biased information circulation. Therefore, they are agnostically promoting the spread of disinformation as fake news is intentionally designed to gain more user attention.
Manipulate public opinion	In a consumer-based economy, public opinion regarding a firm, service, product or people holds significant importance as customers are going to decide the fate of stocks, sales, election results, all types of businesses and many more

Considering the reasons behind the virality of fake news, a study that analyzes the spread of fake news in India via WhatsApp, found that fake news that has provoked violence largely spread because of prejudice and ideology, and not out of ignorance (Banaji et al, 2019). In this context, Heinlein's (2014, p. 69) statement, found in the science fiction collection book, reads, "you can sway a thousand men by appealing to their prejudices quicker than you can convince one man by logic", is somewhat true. That is, the motivation behind sharing fake news in a flash might be fixed on strong personal identification, ideological commitment to a certain ideology, namely, religious affiliation, partisan affiliation, or nationalism. In this context, one can argue that biased individuals receiving fake news messages that are consistent with their ideology or beliefs are more inclined to trust fake messages and even further transmit these messages to other like-minded individuals. Here, an analysis of the political rumor tweets by Shin et al (2017), demonstrating the effective role of partisan structures in rumor diffusion, to some extent validate the abovementioned assumption. In the study, Shin et al (2017) conclude that social media sites such as Twitter and Facebook serve as a platform for political rumor

spreaders, a propaganda tool to disseminate the negative information about opposing candidates through homogenous partisans' relationships. Similarly, Vosoughi et al. (2018) argue that all types of misinformation, and political news, in particular, spread significantly faster and farther on Twitter than on the other social network services. In other words, disinformation spread more effectively within the polarized contexts, i.e., on social media platforms that enable (and promote) the creation of like-minded groups. In this context, the homogenous, polarized communities formed on Twitter diffuse the rumors using the retweet (re-posting of a tweet) feature rather than hashtags, since the goal of such groups is the transmission of the message rather than engagement in dialogue with other, diverse communities (Shin et al, 2017). Accordingly, findings of a particular study suggest that the circulation of rumors in social media occurs within "echo chambers" that amplify existing beliefs in predisposed individuals, demonstrating political homophily. To elaborate further, the principle of homophily suggests that as in real life, users on social media have the propensity to associate and interact with others that have similar traits and ideologies (Brummette et al. (2018), and thus, avoid interaction with alternative points of views. Hereof, the very word homophily comes from the ancient Greek words "homou" meaning together, and "philia" meaning friendship. That is, in the context of social media and the fake news, the homophily creates "homogenous" and friendly environments called echo chambers (Jamieson and Cappella, 2008), the rooms where like-minded individuals are subjected only to certain information such as news, opinions, beliefs repeatedly; and as consequence reinforce, amplify certain, similar attitudes while ignoring counter-attitudinal information. As a result of such "lovely" interactions, homophily negatively affects the whole society since it hinders democracy; opposes the diversity of ideas and makes it harder to find the true meaning of the events (Brummette et al., 2018).

A literature review by Tandoc et al. (2018) based on 34 academic articles published between 2003-2017, identifies six types of fake news namely: news satire, news parody, fabrication, manipulation, advertising, and propaganda. By mapping the different definitions of fake news onto two continuums, researchers found that that fake news falls into the bilateral category that can be designated as "fabrications low in facticity and high in the immediate intention to deceive" (p.148). That is, as authors argue fabrication and manipulation are more likely to possess nowadays fake news qualities since such content

is intended to mislead without any disclaimer and unlike news satires and parodies, meant to "misinform people or attract clicks for advertising money" (Tandoc et al. 2018., p.148).

The definition provided by Tandoc et al. (2018) that specifies that fake news is "fabrications low in facticity and high in the immediate intention to deceive", corresponds with Banaji et al. (2019) findings, and that is, fake news messages spreading via WhatsApp in India are manipulations and fabrications since such messages by its features appeal to individual's national or religious beliefs and intended to instantly activate existing prejudice; specifically, through inducing "affective" fake messages. Thus, emotions are targeted and exploited to trigger an impulse or an action. In other words, fake messages target an individual's "idealized" cultural values or beliefs i.e., rather "sacred" and "fragile" emotional state of mind, triggering negative, irrational (emotional) responses and occasionally aggression towards rumored actions or situations.

A relatively recent taxonomy, that outline the characteristics and clarifies the concept of fake news advanced by Molina et al. (2019), identifies and distinguishes seven different types of online "fake" content such as false news, polarized content, satire, misreporting, commentary, persuasive information, and citizen journalism. Based on the particular classification, authors call for the development of a reliable algorithm that would detect those kinds of fake news. Additionally, based on rigorous analysis, Molina et al. (2019) emphasize that the purpose behind creating and spreading online fake information is not always to inform. That is, while some online information is meant to persuade or entertain (such as satire), other content such as online commentary or citizen journalism, in essence, cannot be considered as news and thus in case of inaccurate information reviewed as fabrication or deceit. In other words, researchers argue that not all kinds of online false information can be examined as fake news. In this regard, based on Southwell et al. (2017) argument, identifying fake news as misinformation is confusing since misinformation, as the name suggests, is relevant only to informationally oriented content (Molina et al., 2019).

Aufderheide's (1993) conclusion that the media "constructed and construct reality" uniting "different ideological, political or financial motivations and implications" (p.3), genuinely suggest the hidden potential of corrupted online messages. Although there are disagreements among researchers regarding the type of information that might be considered fake news, the motivation behind the creation and dissemination of online

fake content is a key that can indicate whether the false information is meant to be fake news.

To sum up all the above-mentioned specifications, Fake News can be defined as misleading stories, fake or unreliable information online on the Internet that went viral, the information that resembles a real news story and yet qualitatively neither factual nor objective. Furthermore, though fake stories, misleading information occasionally can be distributed via legacy media, fake news, based on definitions, predominantly diffuses over social media. Here, taking into account the motives behind the creation and dissemination of misleading information, fake news is deliberately created and designed by subjects, entities, or even enterprises (e.g., troll armies) for political, ideological, and financial reasons.

Considering the different theoretical and operational representations given to a fake news phenomenon, no absolute agreement has been reached on what type of content should be considered as fake news (Molina et al., 2019). Moreover, deliberate political and frequent utilization of the term as a buzzword to undermine the credibility of news organizations (to discredit) as well as an argument against commentary that contradicts opinion, made the term more ambiguous and therefore vague (Nielsen & Graves 2017; Tandoc et.al., 2018).

Egelhofer and Lecheler (2019) argue that fake news as a concept should be examined under two discrete dimensions: fake news as a genre and fake news as a label. In this respect, fake news as a genre refers to the "deliberate creation of pseudo journalistic disinformation"; where fake news as a label refers to political "instrumentalization of the term to delegitimize news media". The authors' suggestion, in fact, enhances understanding of the phenomenon, since fake news, as a label, is somewhat confusing in terms of perceiving the phenomenon. The figure below illustrates Egelhofer and Lecheler's (2019) distinction of the phenomenon.
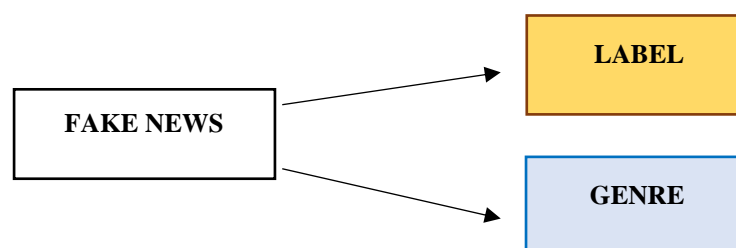
Figure 2.4 *Fake news distinction. (Egelhofer & Lecheler, 2019)*

According to Vosoughi et al. (2018), fake news as a term is "irredeemably politized" by politicians to refer to any piece of information produced by media that does not support a particular partisan position. Thus, as researchers affirm, by suggesting that the content is false, partisan politicians aim to "discredit the reliability" of the "disapproving" media and thus use the term as a label. On the other hand, nowadays not only politicians but rather all biased and partisan individuals might easily dismiss "unpleasant" media sources and relevant news as fake news. In this context, Tandoc et al. (2017) emphasize that fake news proliferates more actively within an atmosphere of social polarization. In other words, society politically divided into opposite groups is more likely to come across and thus share fake news since political and social polarization inherently amplifies the propaganda, information war, and thus dissemination of fake content online especially amid critical times.

As reported by Mihailidis and Viotty (2017) the rise of the fake news phenomenon negatively affects the general perceived credibility of the mainstream media. That is, due to extensive misuse of the concept (i.e., labeling), mostly by right-wing politicians and activists, the general perception of the traditional (and ethical) journalism and to an extent, democracy itself is being sabotaged and undermined by "autocratic, intolerant and self-centered" politicians in power, not to mention their followers. In other words, the constant overuse of this degrading label, for castigating critical news organizations, is directly related to the intention and anticipation of politicians to create the false associations, connotations of 'hostile media organizations'. Thus, the deliberate and constant political rhetoric or 'verbal abuse' i.e., improper and insulting labeling, serves as a critical weapon for uneasy instances; ultimately resulting in overused 'fake news' tag developing into somewhat cliché.

Considering the labeling, Duyn and Collier's (2019) study exploring the role of misinformation in politics found that the discourse about fake news not only affected the electoral outcome but noticeably influence the public overall trust in mainstream media. In other words, findings suggest that frequent discussion about fake news, i.e., labeling within a political context, directly affects public perception regarding political legitimacy, democracy, and mainstream media. In this context, social media platforms and the Internet have significantly altered the perception of the news media and information landscape and not in a positive way. For instance, Tandoc et al. (2017) argue that due to social media, individuals have changed their perceptions of how news should look like.

That is, nowadays a tweet or a post might be easily believed to be a piece of news by some social media users. In this context, Dicker (2016) argues that "fake news is more potent than before" since social media enabled creating and sharing, i.e., reposting and retweeting fake content and accordingly such false posts and tweets affect millions and millions of people who view, "read and share" online messages without even realizing that the information is fake. Unconscious of the difference between the functions of traditional media channels and social media channels in terms of information delivery, individuals on social media not only solely read, consume fake information but tend to deliberately or not, pass around- i.e., share fake information with other social media users, e.g., friends and followers.

Taking into account the functional-relative advantages and/or disadvantages of two different media, contrary to the traditional media, news on social media are not validated, mediated, or controlled by the third parties and thus are capable of spreading more effectively, that is vastly, and rapidly (i.e., virality feature). Nevertheless, based on these advantages of the social media platforms, primarily right-wing populists and those who perceived traditional media as biased had effectively those digital alternatives to get around the mainstream media channels amid the election period, since populist messages would be easily contested on the traditional media (Schroeder, 2018). Moreover, within democracies, populist messages are considered unacceptable within mainstream media, or such kinds of messages are merely against media regulation.

According to Musgrove et al. (2018), at present tweets and posts are easily considered as news items though they do not present any documentation or trustworthiness. Furthermore, as researchers argue subjective messages, personal beliefs spreading from social media are regarded and judged as truth by the audience especially if the message comes from an esteemed or admired person, not to mention if the tweet comes from a person in authority.

Concerning the issue of the apparent shift in perception towards the actual authority and expertise within social media platforms, Harrison and Luckett (2019) argue that the democratization of knowledge and open access to the information within the post-truth era resulted in unmoderated information flood circulating social media and consequent "loss of deference to traditional epistemic and cognitive authority". Thus, as reported by Farrow and Moe (2019), in the digital world of social media "erroneous beliefs are reinforced by social recognition" and as a result "traditional expertise and authority

representing credibility and integrity are undermined and threatened to be replaced by the volume and intensity of repetition" (Harrison & Luckett, 2019). In other words, the truth and the reality on social media are being "buried under" ignorant likes and shares; the facts are being overlooked and disregarded due to the magnitude and the volume of the lie and fake information. Accordingly, deceptive and confusing (dis)informational flood on the social media leads the expertise provided by the experts to be "neither recognized nor understood by non-experts" (Harrison & Luckett, 2019).

Considering the issue of the populists who use social media to disseminate political messages, apparently, those who are biased, are more inclined to believe in such kinds of messages. In this regard, Berghel (2017, p.82) argument that "willfully partisan and unreflective people ignore debunking services on principle and are unwilling or unable to invest time to remain informed of the facts of current issues", makes these individuals more susceptible to all kinds of misinformation, disinformation, and propaganda coming from the politicians and so-called opinion leaders; moreover makes them the perfect and effective disseminators, agents of the fake information, propaganda online (i.e. internet propagandists, a.k.a. internet trolls). Moreover, some of those political commentators turn into a sort of "purveyors of the fake news" or rather "propaganda- zombies". Given the fact that in a sociopolitical context, ideologically like-minded users tend to transmit political messages that are consistent with their political beliefs (Barbera et al., 2015; Jacobson et al., 2015) and social media function as an "echo-chamber that reinforces individuals' pre-existing attitude" (Shin et al., 2017); those who remain ignorant and biased on purpose, serve as the blind propagandist, trolls and irresponsible disseminators of the fake information. In this context, Zaller (1992) argument addressing the nature and origins of mass opinion, suggests that public attitude is generally shaped by the exposure through media where "elite discourse has much the same effect on public opinion across the broad range of topics", and thus, populist propaganda spreading through social media might have a significant effect. In other words, the social media public is more likely to accept biased content, i.e., populist messages including misinformation and disinformation of relevant elite if these messages are coming from like-minded political leaders. Based on that argument, populists, and activists, celebrities using social media to spread propaganda, misinformation and even fake messages along with "partisan" followers are and should be accountable for the fake news profusion since they deliberately or not function as the source and the agent of the misinformation. In other

words, as mainstream media outlets are held accountable for spreading disinformation, hyperpartisan online media outlets, including anonymous ones, alongside related actors such as political leaders, activists, bots, and journalists, are also should be held accountable for spreading fake and misleading content.

Taking into account the origins of the fake news, accountability of the sources, intentions, motivations behind the creation of online disinformation, certainly there are various agents, factors, mediators, and the actors of the particular issue. Politicians, as well as activists, celebrities, influencers, and people in power occasionally, exploit and misuse social media channels on purpose to further subjective and biased ideological beliefs, political agenda (propaganda), and false assertions on a wide range of public matters. In such cases, those public figures spreading inaccurate online information should be (and in fact are) accountable for the consequences in the first place, since those biased and "inaccurate" political messages for the most part are accepted as the truth by their followers.

In this context, the post-truth era, as well as the fake news phenomenon, is closely related to controversial political figure Donald Trump. As a result of the Trump phenomenon, Trump's unique narrative, and disinformation spreading amid the 2016 US election campaigns, the world has been able to experience and observe the grand rise of populism, perceive the negative effects of social media, not to mention to witness the clear emergence of the post-truth era. In this context, Trump's constant use of the word "fake" to criticize and refer to unpleasant situations, made the "fake news" label symbolic to his presidency (Stelter, 2018). Although the utilization of the "fake news" as a term by politicians differs from the actual "false news" ecology, the constant labeling used by Trump to denote political lying, or "false speech" had been effectively attached to the phenomenon (Corner, 2017). In this regard, Egelhofer and Lecheler's (2019) analysis that discerned Fake News as genre and label, definitely furthered the clarification of the concept under the different contexts, including political.

The official affiliation between the "fake news" used as a label and the Trump phenomenon dates back to Donald Trump's first press conference as a president of the US, the time when he confronted a reporter and insulted legitimate news sources as fake news (Vernon, 2017). Further frequent use of the term "fake news" as a buzzword, a degrading label, and an "offensive weapon" by the president, as to refer to the mainstream media since then, is regarded as a tactic of Trump that aimed to divert public attention

from discomforting news. The tactic is known as a diversion (The Guardian, 2018). Accordingly, using the very word fake for actual news stories as a degrading label, and rather as an offensive way that meant to lead away public attention, eventually, has altered the perception as well as the meaning of the concept. That is, "fake news" as a concept has expanded to include more than mere false information; and today, as a label ('weapon'), the fake news tag, is used by partisans to cast aspersions on the veracity of claims made by those who are politically on the opposite side of the political spectrum.

An idiosyncratic study by Ross and Rivers (2018) investigating the keywords of Trump's tweets suggests that by constantly labeling institutionalized mainstream media as fake news, Donald Trump attempts to defer the public from trusting "displeasing" media. Furthermore, analysis reveals that Trump's constant attacks on the media via Twitter, is related to the attempt "to establish himself as a source of the truth" and that kind of policy mainly align with the strategy of deflection, that is, shifting blame to others (Lakoff, 2017). In this context, researchers conclude that Trump operates as a "serial spreader of mis-and disinformation" since his tweets per se, tend to carry Fake News characteristics. Nevertheless, as the authors argue, these tweets cannot be classified as Fake News since Trump is not a media agency. In conclusion, Ross and Rivers (2018) believe that eventually Trump's tweets will erode the public trust in him and raise awareness in citizens that still either rely on arguments of the president of the mainstream media.

Considering the attack by those in power, especially populist leaders, Harrison and Luckett (2019) argue that in the "post-truth" age, the expertise and experts validating knowledge are no longer important, since beliefs and feelings prevail over the facts. That is, ideological beliefs and "common sense" assertions are indeed believed to be true by "the people" ignoring evidence-based information. In this regard, the term "alternative facts" that cognates with Trump's "fake news" interpretation, also associated with the Trump phenomenon. A particular term was coined by Trump's counselor Kellyanne Conway during the press interview where she defended White House Press Secretary Sean Spicer and explained the inconsistency between the photographic record of Trump's inauguration and official figures provided by the administration (McGregor & Park, 2019).

2.4 Arguments regarding the conceptualization of the Fake News

The concept of fake news has been widely politicized and misused, and therefore led to confusion and ambiguity. Accordingly, considering the different theoretical and empirical traditions; basically, there are three types of disagreement regarding the definition of the concept (Molina et al., 2019).

The first disagreement is related to satirical publications. Although Allcott and Gentzkow (2017) besides Berghel (2017) propose to exclude the satire from the fake news taxonomy since satire cannot be regarded as a fact, some scholars argue that the satire could be misunderstood by some readers and consequently accepted as a reality (Klein & Wueller, 2017). For instance, in 2017 Christopher Blair had to apologize for a satire story that many people believed to be real (Funke, 2017).

The second disagreement concerns intentionality. Although, Allcott and Gentzkow's (2017) well-known definition of "fake news" includes "news articles that could mislead readers and are intentionally and verifiably false" some misinformation and misreporting of mainstream media that disseminates from traditional and social media channels raises some questions. According to Allcott and Gentzkow (2017), these kinds of misreporting and journalistic mistakes should not be considered as "fake news" since these occasional misreporting, made up and false stories damage the quality of journalism per se. Likewise, Klein and Wueller (2017) argue that labeling traditional media outlets as "fake news" should not be included in the conceptualization of the fake news since traditional media "are not intentionally or knowingly false in nature". Nevertheless, it is still debatable that the very nature of the journalistic profession is based on objectivity and true representation of facts in the sociopolitical realm, specifically within pseudo democracies. Furthermore, unethical journalism is driven by "the market" and thus every so often corrupt press might operate in a biased fashion; and as a result of the recurrent corruption, the public trust in journalists as truly objective professionals diminished dramatically.

With the advent of social media platforms such as YouTube and Twitter, the journalistic "gatekeeping" monopoly, i.e., to determine and represent the news, to produce and disseminate, filter, and censor the content had been eventually lost. Alongside losing positions, skepticism towards the mainstream media, and rather distrust towards professional journalists have risen dramatically. That is, with the advent of social media, creating and spreading the news content, i.e., the 'truth' as a subjective

interpretation of reality, became available literally to everyone. Moreover, social media as a new media is gaining momentum, and thus, social media already replaced legacy media in its functions. In this context, Dahlgren (2009) emphasizes that in "countries where media are controlled, inaccessible or not trusted, social media platforms force a radical pluralization of news dissemination and democratic processes"; and thus, 'truth' once governed only by media outlets in those countries, became available to everyone, giving more people a "voice". Thus, digital technology to some extent created an opportunity for a pluralistic and more democratic media landscape (e.g., citizen journalism) since every individual using social media – is a prosumer, that is, somewhat a journalist. In this context, social media has been regarded as a technology for "liberation" considering the critical role that the new media has played within the Arab Spring, especially in Tunisia.

Considering the once enjoyed perception of the mainstream media as "objective" and "independent", it has been partially weakened since the power given by the monopoly has been misused and abused by corrupt elites and authorities for shaping and manipulating people's opinions on different occasions. As a result, the rather subjective and "biased" journalism that had been (and is) predisposed to economic and political power; eventually, lead to erosion of public trust toward the mainstream media outlets and journalistic profession in particular; and thus, created the community of skeptics who no longer believe in mainstream media and prefer information provided by more independent social media platforms. In this context, considering that news media is a cornerstone of democracy, the independence of journalists from politicians is vital for journalists' credibility, and yet, since the "independence" is directly related to the funding, ethical journalism is disappearing due to corruption. In other words, ethical journalism is compromised by politicians through political and business pressures, and today, so-called journalists, are paid-for puppets, i.e., pseudo-journalists who merely promote their media owner's business and political agenda. Accordingly, journalism and information nowadays are not working in the public interest as they were meant to be.

Taking into account the rising "tension" between mainstream media and social media, a particular concern can be sensed and followed in a review study by Chen (2018) that compares scholarly journal articles regarding social media published between 2006 and 2017. The study demonstrates that journalists are more critical of the issues of social media compared to librarians. That is, the buzzwords and the phrases related to journalism

literature and social media such as: "citizen journalism", "crowdsourcing" and "journalism 2.0" had appeared in a more negative fashion unlike equivalent buzz words of the librarians.

In this context, it is important to note that though social media might damage democracy, the benefits of social media overshadow the risks. That is, though social media allows individuals to spread misinformation, new media in fact promotes democracy since this technology makes it easier for people to have a voice. Here, to avoid the possible risks, every citizen needs to be aware of how digital technologies are being used/misused. In this regard, journalists instead of being reliant on capital from the third parties (including the governments) can create their own, independent and free channels to deliver the news, informational content and thus follow the journalist ethics (code of ethics/code of practice) by being funded or being sponsored solely by the audience or independent entities and thus actually comply with professional standards such as truthfulness, accuracy, objectivity, impartiality, fairness and public accountability. In other words, the journalistic profession needs to reestablish the honor of the profession by projecting multiple, diverse views by using social media platforms. Moreover, since mainstream media is no longer a monopoly, journalists now capable to stream on social media platforms might "revive the dignity, honor of the profession" and escape forced partiality. In that way, truly independent journalists on social media platforms are able to stop rather involuntary discredit of the professional knowledge, skills that disregard professional ethics for the sake of a financial or political profit.

The third dispute regarding the fake news reported by Molina et al. (2019) is based on conceptual understanding. A condition, when a fake content can be qualified as partially true rather than absolute false (the binary differentiation), makes it difficult to designate the content to one of the two sides. In other words, assessing content that is to some degree factual and inaccurate at the same time is a serious problem. The literature, in such cases, is inclined to accept fake news as a continuum. Thus, the fake content deductively regarded as fake news should be analyzed as a whole yet considering that theoretically, not all false content is fake news. Furthermore, fact-checking websites such as Snopes and PolitiFact, which use armies of fact-checkers, conceptualize 'fake news' as a continuum and classify articles based on the degree of fakeness (Molina et al,2019). Practically it is quite challenging to make exact (binary) distinctions between fake and

real news since fake news might comprise some truth whereas real news might contain some inaccuracies (Potthast, et al. 2017).

2.5 Defining Literacies in The Digital Age: Media, Information and News Literacy

Literacy as a term and the concepts that are being linked to the term are relative and constantly changing (Bawden, 2001). Depending on technological progress as well as historical context, literacy had been introduced and defined under various terminology. Considering the Digital Age, the concept transformed accordingly and thus is recognized under appearing to be different yet related designations such as information literacy, media literacy, critical literacy, computer literacy, news literacy, and digital literacy.

Hobbs and Moore (2013, p.5) argue that the concept of literacy is "changing according to the needs of the society". Accordingly given that humanity lives in the Digital Age, Information Age, or New Media Age, related concepts became more prominent correspondingly.

As seen in the table below, Hobbs (2013) demonstrates the transformation of literacy starting from rhetoric and ending up with digital literacy.

Table 2.3 *How Has Literacy Changed? (Hobbs & Moore, 2013).*

Rhetoric	Speaking and listening
Print Literacy	Reading and writing
Visual Literacy	Image design, interpretation, and creative composition
Information Literacy	Information access, retrieval, evaluation, and usage
Media Literacy	Analyzing messages from media and popular culture and composing with technology tools
Critical Literacy	Recognizing and resisting power relationships in messages and information
Computer Literacy	Understanding and using computer technologies effectively
News Literacy	Understanding and evaluating news and current events
Digital Literacy	Being a socially responsible user of the Internet and social media

Taking into account the changing nature of literacy, Bawden (2001) in a review study, explores the usage of literacy terms between 1980 to 1998 and concludes that information literacy appears under a number of terms in the literature such as computer literacy, library literacy, media literacy, network literacy, and digital literacy. In addition to these designations, Bawden (2001) identified multiple synonyms under the related

studies. Furthermore, by placing on the chart the annual utilization of the abovementioned terms, the researcher demonstrated the evolution and thus "dynamic nature" of information literacy as a concept. In this context, according to the researcher, while the term "computer literacy" had been steadily used in related literature since the 1980s, media literacy as a term "has expanded considerably only in the late 1990s" (Bawden, 2001). The reason behind this, to some extent, is based on the fact that the media literacy concept had been differentiated and widely acknowledged only in 1992.

In its simplest form, the term literacy is defined as "social practices and conceptions of reading and writing" (Street, 1984). Although Bawden (2001) emphasizes that literacy has always been "a relative concept" (p.221), historically it has been used to "describe the state of being able to read and comprehend basic information". Furthermore, as Bawden (2001) argues, though literacy has a first and foremost meaning as the "ability to read and write"; the concept has always had "a dual nature". The second connotation, according to the researcher, goes beyond the sole "ability" and indicates the "ability to read with meaning, and to understand". Here, the second connotation of the literacy concept is directly related to the concept of critical thinking that is defined as "the ability to examine and analyze information and ideas in order to understand and assess their values and assumptions, rather than simply taking propositions at face value" (Wilson et al. 2014, p.182). In this context, Ptaszek (2019) argues that although there are various models of media literacy in literature, "a major component of media literacy constitutes critical thinking about a message (information or text) and its evaluation" (p.2). Thus, media literacy is based on critical thinking skills in the first place and then on skills related to production, creation, technical abilities, etc.

In the age of Information or the Digital Age, amid the technological progress, the concept of literacy evolved into several related terms such as digital literacy, media literacy, information literacy. Although those terms have a lot in common and therefore to some extent duplicate each other, the continuing debates regarding the terminology still have not reached a consensus on account of different academic perspectives and practices. Livingstone et al. (2008), in this context, argue that "new" literacies and complementary terms are the equivalents of the media and information literacies that have been evolving with the technology. Based on the argument, since humanity lives in the Digital Age, new literacy, that every citizen navigating online is required to acquire today, is digital literacy.

The current study sought effective ways, methods to raise awareness on fake news in students, and thus indirectly aimed to confront, struggle against negative consequences of disinformation and misinformation spreading online. To defy the challenge, i.e., fake news phenomenon, individuals need to acquire critical thinking skills alongside some specific technical skills. Since researcher focuses on fake news spreading on social media platforms such as Facebook, Twitter, and YouTube, assessing and enhancing student skills required to evaluate digital content, has been regarded paramount. Hence, media literacy alongside digital literacy is under the microscope within the current study.

Taking into account the designation of the study, since Kahne et al. (2012), based on definitions of Buckingham (2003) and Jenkins (2006), argue that "digital media literacy" is a mere extension of "traditional" media literacy that incorporates "new skills required to navigate today's new media environment", as well as essential skills required for "creative production", not to mention the skills in "how to evaluate and use information critically" (Kahne et al., 2012, p. 4), including the "digital literacy" tag within the title, researcher aimed to emphasize that the main focus of the study is to cultivate particular digital literacy competencies, a.k.a. fact-checking skills, required to evaluate online information critically beside enhancing students' media literacy levels.

According to Hobbs (2010), digital and media literacy education should be introduced into formal and informal settings, where digital and media literacy together would:

> "Encompass the full range of cognitive, emotional and social competencies that includes the use of texts, tools, and technologies; the skills of critical thinking and analysis; the practice of message composition and creativity; the ability to engage in reflection and ethical thinking; as well as active participation through teamwork and collaboration" (Hobbs, 2010, p.17).

Based on the arguments above, since digital and media literacies overlap (Hobbs, 2019), a more concrete designation for the study, would prevent possible misunderstandings; moreover, would clarify inclusive objectives of the study. In other words, including "Digital Literacy" within the title of the current study, is not just a tag but rather a clarity required for a designation, especially considering that the learning aimed at promoting fact-checking skills has been conducted entirely online; not to mention that the study adapted a unique instructional approach and authentic assessments that particularly meant to enhance students' digital literacy skills.

The figure 2.5 demonstrates the essential competencies of Digital and Media Literacies.

Figure 2.5 *Essential competencies of Digital and Media Literacies (Hobbs, 2010, p 18.)*

2.5.1 Media Literacy

There are more than twenty definitions on media literacy (Potter, 2004; Livingstone et.al 2008) and yet a common definition proposed by the National Leadership Conference on Media Literacy in 1992, and widely referred to and cited since then, clarify the concept as "ability to access, analyze, evaluate, and create messages in a variety of forms" (Aufderheide & Firestone 1993).

Aufderheide (1993) argues that "the fundamental objective of media literacy is a critical autonomy relationship to all media" where a media literate person should be able to "decode, evaluate, analyze and produce both print and electronic media". Moreover, the author specifying the underlying concepts of media literacy, reports that to analyze media messages it is fundamental to consider the following aspects:

-Media messages are constructed.

- Media messages are produced within economic, social, political, historical, and aesthetic contexts.

-The interpretative meaning-making processes involved in message reception consist of an interactionbetween the reader, the text, and the culture.

-Media have unique "languages," characteristics that typify various forms, genres, and symbol systems of communication.

- Media representations play a role in people's understanding of social reality.

(Aufderheide, 1993, p. 2)

Established at US Media Literacy National Leadership Conference, these 5 key elements, concepts enumerated by Aufderheide (1993), have stimulated collaboration among media instructors (Hobbs, 1998).

A relatively similar definition of media literacy approved by the European Commission in 2007, characterizes media literacy as the "ability to access the media, to understand and evaluate critically their contents and to create communications in a variety of contexts". Additionally, according to the definition, media literacy is "built on three main elements: access to media and media content; critical approach, ability to decipher media messages, awareness of how the media work; creativity, communication, and production skills" (European Commission, 2007).

Another common definition has been provided by the UK Office Of Communications (Ofcom), where media literacy has been defined as the "ability to access, understand and create communications in a variety of contexts". Ofcom, the British media regulator, is a watchdog that "provide an evidence base of citizen's understanding and use of electronic media" emphasize the critical role of formal education in promoting media literacy, and thus by regularly examining effects, outcomes of formal education regarding the media, affirms that "education plays a vital role in laying the foundations of media literacy" (Ofcom, 2004).

Accordingly, as abovementioned common definitions set forth, the ability to access, critically analyze, evaluate, and create media messages are fundamental elements, a set of interrelated skills (competencies), basic criteria for every individual to acquire, to become a media literate.

According to Meyrowitz (1998), media literacy can be classified as media content literacy, media grammar literacy, and medium literacy. As a result, media content literacy, as the researcher suggests, incorporates the knowledge of "intentions, ideas, and values behind the messages", media grammar literacy considers the "various techniques used in textual and visual messages" and medium literacy deals with "the knowledge of different characteristics of media" (Jeong et al., 2012).

Renee Hobbs's (1998) essay addressing the "The seven great debates in the Media Literacy Movement", indicates that "broad definition and range of applications of media

literacy concept led to diverse approaches, creating some intriguing conflicts and tensions" (p.7). That is, media literacy as "an expansive and unstable concept" enjoys the "diversity of perspectives among educators", and accordingly such diversity might either be "a source of strength" for the media literacy movement or essentially as an "apple of discord". Considering the diverse perspectives regarding the concept of media literacy, Hobbs (1998) argue that "educators and scholars with different disciplinary backgrounds in media studies, the fine and performing arts history, psychology and sociology, education and literary analysis" rigidly defend particular "understanding of what it means to have an ability to access, analyze and evaluate and create media texts" and as a consequence of such (inadequate) rigor, fail to understand "the extent of the complexity, depth or integrity of various approaches". Accordingly. Hobbs (1998) advocates for a consensus and collaboration among the researchers, and particularly "support cross-departmental efforts among media studies faculty and educational faculty" since diverse understandings would provide strength, and since media literacy, is at the "intersection of media studies and education".

According to Hobbs and Jensen (2009), media literacy can be considered "as an extension of the practice of rhetoric, developed during the 5th century B.C. to teach the art of politics through the development of oratory and critical thinking" and it is crucial to engage individuals in "active inquiry and critical thinking about the messages created and received" since "the knowledge can be developed through questioning practices that deepen analysis and reflection". Hence, media literacy education should be based on promoting inquiry and further development of critical thinking skills.

Considering the practical aspects of media literacy education, Jeong et al. (2012, p.2) review study on media literacy interventions demonstrate that media literacy indeed "enhance criticism in individuals by increasing knowledge and awareness of the media and its significance". Moreover, as the authors note, media literacy interventions tend to "reduce the negative effect of the media on personal beliefs, attitudes, norms, and behaviors" (Jeong et al., 2012, p.2).

In the current age of Information and Media, literacies such as digital literacy, media literacy, and information literacy turned out to be more than just an alternative or an option, these literacies are essential right "for freedom", required protection that shield individuals from potential negative effects of media and information. Though these literacies are akin, considering the central element in all of these literacies is critical

thinking, scholars tend to opt for specific ones, the ones relevant to their disciplines. In this context, Bawden (2001), reviewing information and digital literacies, claims that media literacy overlaps with the concepts of information literacy considering that media literacy is used to "imply critical thinking skills in assessing information gained from the mass media". On the other hand, Livingstone, Van Couvering and Thumim (2008) argue that although there are similarities between media and information literacy, there are also some notable differences. As the authors conclude, one of the main distinctions lies in the general focus of each literacy. While media literacy addresses the "understanding, comprehension, critique and creation of media materials, information literacy addresses the identification, location, evaluation, and use of information materials" (Livingstone et al, 2008). Moreover, according to the authors, research questions of each literacy differ as well. Media literacy concentrates on questions of understanding, yet information literacy focuses on questions of access.

Considering the purposes of media and information literacies for individuals and society, Livingstone et al (2008) suggest that both literacies primarily advance democratic participation and active citizenship; strengthen knowledge economy, competition, and choice; and lastly support lifelong learning, cultural expression, and personal fulfillment. Similarly, Hobbs (2010, p.8) recognizes digital and media literacy competencies as a form of core competencies of digital citizenship and defines it as a "constellation of life skills that are necessary for full participation in nowadays media-saturated, information-rich society". Moreover, Hobbs (2010) argues that digital and media literacy competencies are core "constituents of citizenship in the digital age".

Hobbs (2010) respects digital and media literacy competencies as one and briefly defines 5 core competencies as access, analyze and evaluate, create, reflect, and act.

In the current study, the researcher predominantly focuses on the first and second competency of digital and media literacy, namely (a) access, that is, effectively locating required information on the Internet, (b) analyze, and evaluating, i.e., analyzing online messages by identifying the author, purpose, and point of view, and evaluating the quality and credibility of online content (Hobbs, 2010, p.19).

The figure below demonstrates the five core competencies of the Digital and Media literacies, where competencies being under the focus of the current study are highlighted in blue and yellow respectively.
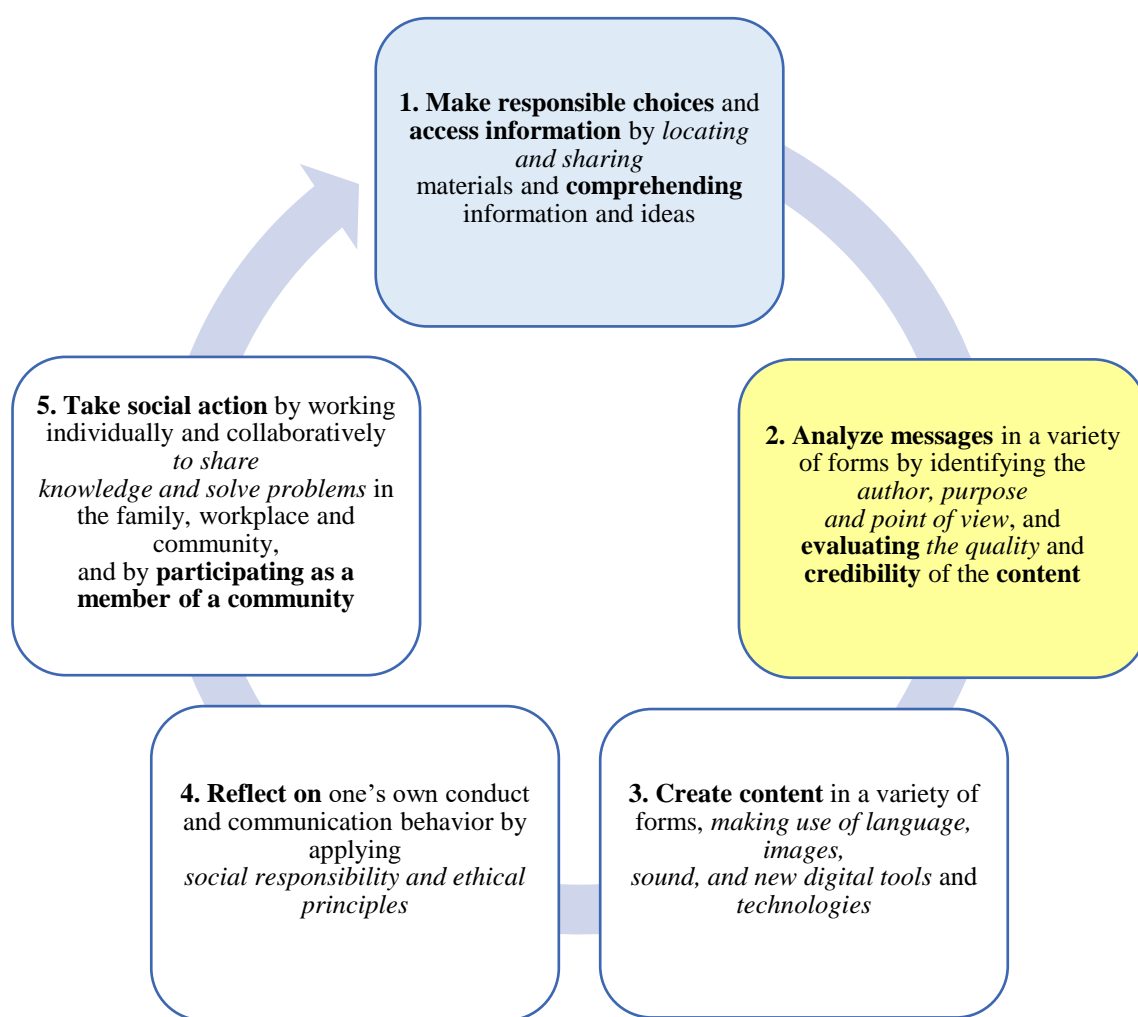
Figure 2.6 *Digital and media literacy competencies (Hobbs, 2010, p.8)*

Regardless of minor differences between the concepts, digital, media, and information literacy incorporate a critical approach towards the subject and are considered as the essential competence required for civic participation, social transformation, and lifelong learning in the digital age. In other words, all those literacies embody critical thinking, that is, abilities to focus and think reflectively and reasonably about the message, prior to deciding on action (Ennis, 1985), i.e., believing the misleading message and being provoked, taking into account fake news exposure.

Due to its interdisciplinary nature, media literacy, as well as information and digital literacy, has the potential either to promote democracy, enhance (empower) or undermine sociocultural values. As a result of the dual potentiality, media literacy as the broader term, in particular, is established as a critical subject in disciplines such as arts and humanities and social sciences.

2.5.2 Information Literacy

Information literacy, as a term closely related to media literacy, is defined by Doyle (1994) as "the ability to access, evaluate and use information from a variety of sources". The term, which first appears to be used by Paul Zurkowski in 1974, had been denoted as "techniques and skills for utilizing the wide range of information tools as well as primary sources in molding information solutions to problems" (Bawden,2001). Thus, according to the definitions, an information literate individual, through the process of information seeking, evaluation, and use, is able to retrieve required information from different sources, make informed decisions and effectively solve problems.

A conceptual foundation of information literacy stems from information processing. As a major study of cognitive psychology, information processing focuses on the process of how symbols become information and how information becomes knowledge (Bawden, 2001; Livingstone et al., 2008; Marcum, 2002). Correspondingly, information literacy is directly related to computer literacy, due to interrelated studies that analyze the individual's ability to find information efficiently and effectively in computers and related technologies. In this context, the human-computer interaction (HCI) field identifies the very literacy as an interaction between skillful users and interfaces (Livingstone et al., 2008). Considering the interrelated nature of these literacies, Kymes (2011) believes that "information literacy, media literacy, and information and communication technology (ICT) literacy are commonly interwoven and frequently substituted for one another".

One of the first well-defined and widely accepted denotations of information literacy had been provided by American Library Association (ALA) in 1989, describing information literacy as a "set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate and use effectively the needed information" (Lin et al, 2015). The akin definition is provided by the Association of College and Research Libraries (ACRL, p.11) and reads as "a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate and needed to find, retrieve and analyze, and use information". Emerged from ALA, ACRL interpretation eventually become prevalent and subsequentially standard (ACRL,2000). Although there are various definitions of information literacy across the globe, the American Association of School Librarians (ASASL) and Association of Educational Communications and Technology (AECT) publication "Information Power:

Building Partnership for Learning" issued in 1998, served as a basis for information literacy standards and guidelines framework for several countries including USA and Australia (Lin et al, 2015).

The ALA & AECT (1998) Information Literacy Standards contains nine information literacy requirements divided into three categories: information literacy, independent learning, and social responsibility.

The ACRL (2000) information literacy standards for higher education are assessed by 22 performance indicators listed under the five following specifications.

Table 2.4 *ACRL (2000) information literacy standards for higher education*

The ALA information literacy competency standards for higher education (ACRL, 2000)	1. Defining and articulating the need for information
	2. Accessing needed information effectively and efficiently
	3. Evaluating information and its sources critically and incorporating selected information into his or her knowledge base and value system
	4. Using information effectively to accomplish a specific purpose
	5. Understanding many of the economic, legal, and social issues surrounding the use of information and accessing and using information ethically and legally

Considering the above-mentioned specifications of Information Literacy as well as Media Literacy, evidently, both literacies aspire to promote "first of all, democracy, participation, and active citizenship; secondly, knowledge economy, competitiveness, and choice; and thirdly, lifelong learning, cultural expression, and personal fulfillment" (Livingstone et al, 2008).

2.5.3 News Media Literacy

Since fake news as a neologism refers to fabricated, false, and misleading news, the concept of news literacy, considered as a type of the broad "media literacy" field, becomes prominent than ever (Tully et al., 2020). Additionally, considered as a type of media and civic literacy (Tully et al., 2020), news media literacy, addresses the "possibilities and pitfalls that are created by the intersections of journalism, citizenship, and technology and aims to renew a demand for diverse, independent, credible, and deep civic information" (Mihailidis,2012).

Given that the phenomenon of fake news undermined traditional journalism as an ethical profession, news media literacy currently is seen as a "promise for promoting democracy by fostering increased news consumption, civic engagement, and democratic participation" (Hobbs,2010; Mihailidis;2011).

Considering the definition of news literacy, Malik et al (2013) argue that news literacy is a specific concept, with no single definition that aims to empower citizens. Accordingly, the concept is disposed at the intersection of information and media literacies. Furthermore, as researchers contend, nowadays "news consumers should think like a journalist" and need to possess five essential skills and competencies such as: "a) understanding the role news play in a society b) the motivation to seek out news c) the ability to find, identify and recognize news…d) the ability to critically evaluate news e) the ability to create news "(Malik et.al 2013, p. 5). In this context, Peters et al. 2018 point out that "journalism and reporting entail dynamic analysis, inspecting and construing, checking and questioning, comparing and assessing, and portraying and discerning". Accordingly, news prosumers (producers and consumers) populating social media platforms are required to possess these skills.

Considering the skills and competencies of news literacy, Nee (2019) argues that since fake news targets all individuals on digital platforms' "information verification skills should be taught not only to journalists but to all students". That is, above mentioned skills of the news literacy outlined by Malik et al. (2013), should be instilled and practiced in all formal and informal educational environments. Moreover, skills of inquiry, the core skills of the journalistic profession, not to mention a number of other subject domains should be enhanced throughout all stages of education considering that true education aims to cultivate an independent, that is, self-motivated life-long learner.

According to Craft et al. (2017) news literacy is "an ability to access, analyze and interpret news messages". Moreover, according to the researchers, news literacy focuses on "empowering the news consumers to seek useful and accurate information so that they make informed decisions related to the political and social structures of the society". Similarly, Tully et al. (2020) promote news literacy as a specific concept that encourages critical news consumption, arguing that news literacy is a "type of media and civic literacy that focuses on news production, context, consumption and the role of the press in a democratic society". Moreover, according to the researchers, considering the current false

and misleading information environment, news literacy is particularly relevant "to address the spread of misinformation".

Concerning the abilities of news literacy, evidently, these skills have a lot in common with other media literacies such as information and media literacy. Therefore, incorporating news literacy skills into the broader concept of media literacy seems a reasonable and rather practical solution for educators as well as learners.

2.6 Integrating Media and Information Literacy. MIL as a global concept.

Although the concepts of media literacy and information literacy have a lot in common, throughout history these terminologies developed independently and thus interpreted, presented, and implemented separately across the related disciplines (Kymes, 2011; Lin et al., 2015). Despite the differences emerging due to institutional context, in the current era of post-truth politics, more and more scholars agree on adapting broad and practical concepts that would address the current complex information environment, is necessary (Jones-Jang et al., 2019).

According to Kymes (2011, p.184) even though the "similarities in purpose and definition of media literacy and information literacy are striking" and the concepts are used synonymously, neither of these literacies alone "has achieved the scale needed to make systematic changes in public education".

Considering the different literacy concepts, or precisely, different designations of somewhat similar concepts that have been emerging concurrently with the technological progress, Bawden (2001) has suggested adopting a complex as well as a broad form of literacy that would focus on (a) understanding, (b) meaning and (c) context, and would address relevant problems of the information environment. That is, the author argues that a catchy name, a designation of the concept, name as information literacy, media literacy, digital literacy, or just a literacy is not a subject matter; and yet a real debate should focus on and address the issues of effective advancement of the principles and practices that underlie these (akin) disciplines. In other words, Bawden (2001) emphasizes that researchers and practicians should focus on fundamental ideas, principles, and objectives of these literacies, and that is, enhancing individuals' inquiry skills and fostering critical thinking skills. In addition, the researcher argues that educators should focus on real practice and strive for reaching tangible results, rather than making arguments about the designations.

Furthermore, Livingstone et al. (2008) in a review study on media and information literacies argue that though there are differences in theories, methods, and disciplinary backgrounds, media literacy and information literacy should have been improved to a joined, or at least involved to a dialogical concept. Authors justify the argument for "fusion" by propounding that regardless of the differences that literacies have, these literacies include similar objectives, and that is "understanding of" and "effective engagement" with media and ICTs of all kinds.

Jones-Jang et al. (2019) comparing media literacy intervention studies including media literacy, news literacy, digital literacy, and information literacy, also has reached the same conclusion, and that is, that the academic world should focus on an "overarching framework that would connect practical applications and strengthen central lifelong learning goals"; a broad unifying framework that eventually would eliminate "theoretical discrepancies among literacies" (p.13). Moreover, Jones-Jang et al. (2019) argue that a wide array of media literacy concepts such as media literacy, information literacy, news literacy, and digital literacy established in different traditions make the researches on the concept more confusing. That is, diversity in "ideas" negatively affects the "practice", since diverse conceptualization regarding a single concept impedes the progress of the studies and makes the research on the subject impractical.

The global sine qua non, i.e., the call to bridge information literacy and media literacy concepts, and create an effective overarching framework, has triggered The United Nations Educational, Scientific and Cultural Organization (UNESCO) to adopt and recognize Media and Information Literacy (MIL) as an integrated concept. To further the notion, the organization has developed and issued several relevant documents on MIL for member states. For instance, to promote and further the MIL as a concept, UNESCO has published "Media and Information Literacy: Policy and Strategy Guidelines". All related publications on MIL are available at UNESCO's official site for free.

As seen in Figure 2.8 below, UNESCO has integrated the key elements, learning outcomes of media and information literacy, to forward the MIL as one broad concept.
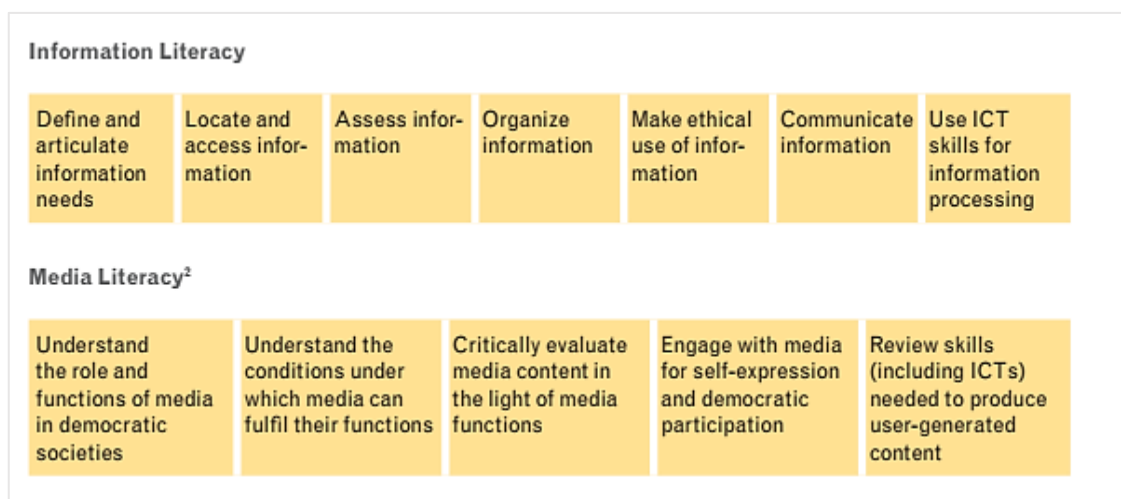
Information Literacy						
Define and articulate information needs	Locate and access information	Assess information	Organize information	Make ethical use of information	Communicate information	Use ICT skills for information processing

Media Literacy[2]				
Understand the role and functions of media in democratic societies	Understand the conditions under which media can fulfil their functions	Critically evaluate media content in the light of media functions	Engage with media for self-expression and democratic participation	Review skills (including ICTs) needed to produce user-generated content

Figure 2.7 *Key Outcomes/Elements of Media and Information Literacy. (Wilson et al., 2014, p.18)*

Media and information literacy (MIL) as a concept is defined as "essential competencies that allow citizens to engage with media and other information providers effectively and develop critical thinking and life-long learning skills for socializing and becoming active citizens" (Wilson et.al 2014, p. 187). Hence, as the definition stands for itself, the keywords are within the definition, and thus to be considered as media and information literate individual, one should be able to engage effectively with diverse media and information sources, think critically, strive for life-long learning skills, and ultimately, keep on sustaining as an active citizen. Taking into account the MIL definition, to promote relevant skills in students, enhancing students' critical engagement with media and information within and outside the classroom, by means of enabling them to question and understand "who has created particular information and why; the roles, responsibilities and function media, information providers and memory institutions", is fundamental, for MIL is " essential to the well-being and progress of the individual, the community, the economy and civil society" (IFLA, 2012). That is if teacher educators long to cultivate responsible and active citizens, promoting MIL within teacher education faculties, that is, integrating MIL education within teacher training programs, is a must.

UNESCO's "MIL Curriculum for Teachers" as a flexible and comprehensive framework has been considered to be the most relevant and practical structure for the current study, since the researcher, as instructor sought to integrate interrelated literacies namely, digital, media, and information literacy. To consider, since MIL as a broad concept, includes information literacy, news literacy, media literacy, digital literacy,

internet literacy, etc.; the framework enables the researcher to integrate all interrelated digital, media, and information literacy concepts as well as the subjects related to these akin concepts, including the 'fresh' presentations on Fake News phenomenon.

UNESCO's curriculum for teachers, addressing critical subjects, within the learning outcomes, focuses on enhancing individual's (a) understanding of the roles that the media and information have in democracy, (b) awareness of the significance of analyzing the socio-cultural context of the content, and at last but not least, (c) facilitating the competencies that would enable individuals to critically evaluate content (Wilson et al., 2014).

Considering the ubiquity of disinformation, misinformation, and fake news, one should be able to understand the agents involved. Moreover, since fake news, is a global issue, adopting a comprehensive curriculum framework, the curriculum that has been designed for teachers and teacher educators, has been considered practical, since the study aimed at enhancing relevant skills and knowledge in prospective teachers. That is since the study has been conducted in education faculty, with the students studying at the Department of Computer Education and Instructional Technology (CEIT); the MIL curriculum framework, was an applicable model to adapt within the research taking into account all the learning objectives and the questions addressed within the study.

Figure 2.8 demonstrates the inclusiveness of the MIL as a concept. The blue arrows somewhat indicate the most relevant concepts that relate to the focus of the current study.

Figure 2.8 *The Ecology of MIL: Notions of MIL (Wilson et al., 2014, p. 19)*

2.7 Related Studies

New media, defined as "content organized and distributed on digital platforms" (Wilson et al., 2014, p, 188) as well as digital platforms themselves are a double-edged sword since every new technology brings on either positive or negative effects for either society. Being dependent on how an individual uses new technology, the tools can either empower or waste the user's potential. For the most part, critics focus on the negative side of new media as well as digital platforms and emphasize that uncontrolled use and exposure to technology and 'unhealthy' information leads to unwished-for side effects and incidents such as cyberbullying, offensive, racist, and explicit content, violent content, inaccurate information, etc. (Hobbs, 2010). It is obvious that young individuals are among the most vulnerable group in such cases since they are among the most active users of social media (Kemp, 2020), who naturally are being exposed to, and occasionally consume 'unhealthy' information.

Parents and educators, in this context, are accountable for preventing the negative effects of media and technology since it is expected that adults would prepare savvy young individuals that would be able to use technology appropriately, think critically, consume new media sensibly, and navigate online more wisely. Nevertheless, since adults, i.e., parents, were probably raised among old media, they might lack understanding of new media and digital technology and thus, are unaware of the concepts such as new media literacy and digital literacy. Hence, it is the responsibility of the school to cultivate these literacies among the young generation. The question here, however, is whether the teachers are ready to cultivate new media literacy and digital literacy skills.

Fake news is an ill that currently plague social media platforms. By raising awareness of that problem, teacher educators, facilitating the learning of teachers and student teachers, might countering the spread of fake news. To immune young individuals against all kinds of adversities induced by digital media, and specifically disinformation and fake news spreading on social media, it is necessary to expose young individuals to fake news, and all kinds of inaccurate and misleading digital content under adults' (i.e., educators) control. That is, similar to vaccines being designed by scientists and shotted under doctor's control, contains a small amount of virus that aims to enhance individual immunity, educators also should design a course of treatment and conduct an experiment, i.e., "vaccinate" students under control. In other words, teachers should be able to expose students to fake news and disinformation within classroom walls, and consequently,

upskill students to be savvy consumers of media messages. Teachers should expose students to fake news under experts' control so that the students could stay immune against infodemic, i.e., fake news outside the classroom walls in the future. In this context, "vaccines" should contain practical instructions on how to use social media wisely and how to cultivate fundamental skills that would help students discern fake news from real news. The key component, i.e., a skill here is to discern; and to enable students to discern fake news, educators should teach students how to evaluate digital content, locate critical information online before anything else. Hence, following "immunity-boosting shots" made by experts, young individuals are expected to acquire and master relevant competencies with respect to digital literacy, information literacy, and media literacy since all these literacies are prerequisites for the 21st-century citizen (OECD, 2021); not to mention that these literacies are fundamental for lifelong learning, for progress and democracy (Wilson et al., 2014).

Since fake news is a relatively recent phenomenon, experimental studies regarding the positive effects of media literacy, digital and information literacies on discerning fake news, were rather limited. In this context, Jones-Jang et al.'s (2019) review study on media literacies reveals that "little empirical evidence suggests the positive role of media literacies in fighting the fake news" (p.2). Specifically, Jones-Jang et al. (2019) review and compare different media literacy scales, namely: information literacy, news literacy, media literacy, and digital literacy scales, and subsequently found that only information literacy scale that measures actual knowledge, significantly correlates (predicts) accurate identification of fake news. Based on findings, researchers suggest measuring students' actual knowledge when it comes to discerning fake news since actual knowledge and perceived knowledge (beliefs) are "entirely separate concepts"; and thus, when individuals are being challenged to discern fake news, those who believe that they are able to do so has failed to recognize the fake news in actual tests. Ultimately, researchers propound that "to inoculate students against misleading online messages", or in other words, to enable students to accurately identify fake news on their own, a "comprehensive framework of media or information literacy" is needed, where emphasis on assessing the actual knowledge rather than perceived knowledge should be placed (Jones-Jang et al., 2019, p,13).

A recent quantitative analysis study of literature regarding fake news prepared by Righetti (2021), covering articles published between 2016-2020; reveals that in total

"2,368 documents, written by 5,060 authors and published on 1,225 different sources" have "fake news" as a distinct term in the title or abstract. According to the researcher until 2016 the number of documents mentioning the term was less than 10 per year; however, the trend has changed following the 2016 US election, i.e., the Trump phenomenon. Taking into consideration the disciplinary fields, Righetti (2021) found that computer science and social science enjoy the largest number of published documents. In this context, the researcher emphasizes that "not only US and UK, but also many non-Western countries such as India and China", has published a large number of studies. Nevertheless, based on the figures available within the study, researchers from Turkey did not enter the list and published less than 15 scientific documents related to 'fake news', considering the Scopus database.

According to a review study by Pennycook and Rand (2021), who analyzed the reasons behind why people believe and share misleading news online, individuals demonstrate such behavior due to "lack of careful reasoning and relevant knowledge, and the use of heuristics such as familiarity"; and not because of commonly believed narrative, i.e., "politics drives susceptibility" (p.388). In other words, individuals' inattention rather than "partisanship or politically motivated reasoning", best explains why people fall for fake news. Based on that finding, researchers argue that interventions that would make social media users "to stop and reflect on the accuracy of what they see on social media" or in other words, "to focus on accuracy" of the content as well as social media ranking algorithms that are crowdsourced according to veracity ratings provided by social media users, could help to tackle the problem. That is, as authors argue," in cases where people actually do stop and think" about the content they come across on social media, individual's "relevant prior knowledge" including "political knowledge" for political news content, individual's "media literacy" and "general information literacy" is found to be a critical factor that positively affects the "truth discernment" (p.392). As a result, researchers recommend using "simple prompts that shift attention to accuracy" as well as presenting "digital literacy tips" for fighting misinformation (p.399).

Another study that has been conducted in India and USA, found that the intervention, i.e., providing "tips" to individuals on how to spot false news, significantly improved discernment between mainstream and false news headlines among both a nationally representative sample in the United States and a highly educated online sample in India. Hence, as researchers argue, particular findings "provide important evidence that

shortfalls in digital media literacy are an important factor in why people believe misinformation that they encounter online"; and thus, to counter fake and misleading news, campaigns in media literacy should be promoted (Guess et al., 2020, p.15542).

A meta-analytic assessment on 51 media literacy interventions across diverse agents, target age groups, settings, topics, and countries demonstrated that media interventions have positive effects on media-relevant and behavior-relevant outcomes, namely media knowledge, criticism, attitudes, self-efficacy, and behavior (Jeong et al., 2012). That is, as researchers argue, media literacy interventions are rather effective in the acquisition of particular media literacy skills.

A study by Vraga and Tully (2016), testing the impact of relatively short news media literacy messages on students with different media literacy background knowledge, has demonstrated that students' beliefs are affected by preexisting media literacy education. In other words, those who had been subjected to media literacy education in the past, have a better level of news media literacy skills than those who had not been exposed to education in the past. For a suggestion to further media literacy education authors recommend integrating classroom and non-classroom interventions.

Similarly, a study by Maksl et al. (2017) regarding news media literacy, confirms that the college students subjected to news literacy courses demonstrate a higher level of news media literacy, greater knowledge of current events, and higher motivation to consume news as opposed to the control group. Thus, as the authors emphasize, news media literacy plays a vital role in public participation, individuals' awareness of current events, and the survival of news organizations.

Furthermore, Craft et al. (2017) study examining news media literacy effects on individuals' awareness of misinformation and conspiracy theories, demonstrates that greater news media literacy resulted in greater news skepticism and greater news awareness. In other words, news media literacy intervention resulted in greater awareness of misinformation regardless political ideology of individuals. Hence, the greater awareness of news media results in a more critical evaluation of the news material and a smaller probability of an individual falling prey to misinformation. Based on the above-mentioned researches, enhancing news media literacy in students might be effective for fighting Fake News, as well as preventing the further spread of online misinformation. Moreover, promoting news media literacy, or more broadly media literacy, might further encourage young individuals' social and political engagement.

Media literacy intervention by Hobbs and Frost (2003) that explored the acquisition of critical media literacy skills in undergraduate students, has found that integrating media literacy positively affects the development of students' message comprehension and critical-thinking skills. Moreover, according to the research, media literacy intervention enhances students' ability to identify main ideas in audio, visual, and written media.

A relatively new study by Nee (2019), exploring social media utilization regarding the news and information consumption, revealed that youngsters unlike their older counterparts prefer more visual social media platforms such as Instagram along with private messaging apps such as WhatsApp to get and share the news. In this context, older individuals prefer to use Facebook and Twitter more often to get news and share news compared to the younger generation. In addition, according to the research, unlike young individuals, older people are more likely to verify information found on social media.

A study by Erişti and Erdem (2018), that focused on the media literacy skills of hundreds of prospective teachers in Turkey, found that in general participants have medium-level media literacy skills. Moreover, qualitative findings revealed that participants lack some basic media literacy competencies related to access, analysis, evaluation, and communication.

A recent study directly related to the current study found that college students are capable "to learn to evaluate the credibility of online sources through asynchronous instruction embedded in regular course content" and thus, not only face-to-face settings improve students' competencies at judging the credibility of online sources, but also asynchronous remote instruction is proved to be effective (Breakstone et al. 2021, p. 2). In this context, online intervention, according to researchers "included instructional videos; exercises in which students evaluated online sources; and screencasts that modeled how to evaluate the credibility of these sources" (Breakstone et al. 2021, p. 2).

3. METHODOLOGY

The study's primary purpose is to raise prospective teachers' awareness of fake news through intervention, i.e., course of instruction designed by the researcher to enhance digital and media literacy competencies of the subjects. Specifically, the study aims to enhance critical thinking skills in students and empower students to critically consume news and other online content. Hence, the researcher's main aim is to foster wise consumption and cultivate savvy consumers of digital content.

Considering the primary purpose of the study, the researcher by designing particular instruction had aimed to test and evaluate the overall effectiveness of the particular intervention. Based on the assumption, the researcher expected that particular online instruction would enhance students' digital literacy skills, new media literacy skills, and information literacy skills; and thus, the intervention would positively affect students' abilities to discern 'fake news' spreading on social media; as well as would positively affect students' overall awareness of fake news phenomenon.

Based on the main purpose of the study as well as questions addressed within the study, the researcher by embracing a pragmatic worldview, has decided to collect diverse types of data; since different types of data, "best provides a more complete understanding of a research problem than either quantitative or qualitative data alone" (Creswell & Creswell, 2017 p. 62). Accordingly, by collecting qualitative data, the researcher sought to holistically understand the outcomes of the intervention as well as gain critical insight regarding participants' experiences within and after the intervention. In this context, Creswell and Clark (2017, p. 13), state that "the qualitative method can be embedded within a primary experimental methodology" where a qualitative research method would serve as a secondary method "providing an enhanced understanding of some aspect of the intervention".

Since the focus of the study, i.e., fake news is a relatively recent and complex phenomenon, existing in more than one form (Egelhofer & Lechler, 2019); particular phenomenon might be perceived differently. Hence, discovering different perceptions, focusing students' attention on the 'genre' dimension of the phenomenon, as well as gathering information on the learning process within the study, was essential; for individuals' perceptions of the phenomenon, students' understandings, would have directly affected the outcomes of the study.

Taking into account one central phenomenon and all interrelated questions addressed within the study, the researcher had come to realize that "using only the quantitative or qualitative approach, each by itself, would be inadequate"; and therefore, have accepted the fact that by addressing "the strengths of both quantitative and qualitative research", the researcher might provide more complete, holistic view regarding the outcomes of the study (Creswell & Creswell, 2017, p. 64). Moreover, since the students are the central stakeholders of the study, the effects of the intervention upon them had to be assessed quantitatively and qualitatively (rather holistically), or in other words, objectively and subjectively. In this context, qualitative data, collected within authentic assessments, were used to 'measure' the students' progress with respect to digital literacy skills. Moreover, the data has been put into use to provide an enhanced understanding of quantitative findings, i.e., main aspects of the intervention, and thus qualitative data has been embedded as additional data that refine quantitative findings.

3.1 Research Design

The design that has been considered for the study involved intervention, an experiment that has been enhanced (enriched and ensured) by qualitative data. Here, a secondary component of the intervention included qualitative methodology that has been added "to enrich the experimental results" (Creswell & Clark 2017, p. 171). In this context, the very word enrichment means refining and complementing the experimental findings of the study.

The researcher's decision to follow an intervention mixed method design for the study has been considered a practical and pragmatic step since as Creswell and Creswell (2017, p.343) emphasize, mixing, that is, "integrating both forms of data", would provide stronger and enhanced understanding of the outcomes of the intervention. For the current study, qualitative data collected within intervention had been analyzed and presented inclusively, that is, as a part of an experimental trial. In this context, Creswell & Plano Clark (2017, p. 69) argue that the "timing" of collecting qualitative data within the experiment, "reflects" the purpose behind embedding the qualitative data. For instance, as authors argue, if a researcher collects qualitative data after the experiment, it might mean that the researcher either intends to "to explain the results of the intervention" or "to follow up on the experiences of participants with certain types of outcomes". Taking into account the present study, the researcher collected qualitative data *within* and *after*

the experiment, to better explain the outcomes of the intervention. Here it is important to note that, the research design of the current study, is also referred to as an embedded mixed methods intervention design since the design involve collecting qualitative data, in this case, during and after the intervention phase (Creswell & Clark, 2017). In other words, since the researcher is embedding qualitative data collection and subsequent analysis within and after intervention trial, particular design is accepted as complex mixed methods experimental (intervention) design. Qualitative data, in this context, collected during experiment, to a certain extent, help the researcher to understand the student teachers' experiences with the intervention. In other words, qualitative findings collected within and after the intervention will allow the researcher to further explain the outcomes, examine participants' experiences, and thus might shed light on some critical aspects regarding the intervention, and even provide suggestions for future studies.

The current study followed a mixed-methods intervention (a.k.a. experimental) design (Creswell, 2013, p.41) since a particular design allowed the researcher to collect qualitative data subsequent to and within the experiment. Opting for a particular design, enabled the researcher to better understand the outcomes of the intervention as well as define factors that might have affected the overall results.

The researcher collected qualitative data within the experiment by means of formative assessments, also known as assessments for learning. On the other hand, to collect qualitative data post-experiment, the researcher administered an online survey and conducted semi-structured one-on-one interviews. Furthermore, to obtain data regarding students' prior experience, the researcher administered an online survey before conducting the intervention, a survey that comprised of 2 closed-ended and one open-ended question. Figure 3.1 below, demonstrates the design followed for the study.

Considering the figure, for pretest and posttest, the researcher administered two different scales namely, New Media Literacy Scale (NMLS) and Information Literacy Self-Efficacy Scale (ILSES). Both of these scales have been administered before intervention and after the intervention. Following the posttest, the researcher has collected qualitative data by means of surveys and semi-structured interviews. Qualitative data collected within the intervention is unstructured data that has been obtained in form of responses for the assignments. Considering that the researcher introduced one assessment for each week, qualitative data that has been collected within seven consecutive weeks is the most saturated data of the study. In this context, assessments administered for seven

consecutive weeks, aimed to enhance students' learning and thus, those formative assessments allowed the researcher to gather information, i.e., collect qualitative data, that was used to adjust the learning cycle. Hence, to reinforce students' learning, the researcher added two more assessments for the final weeks since five assessments were considered not sufficient.
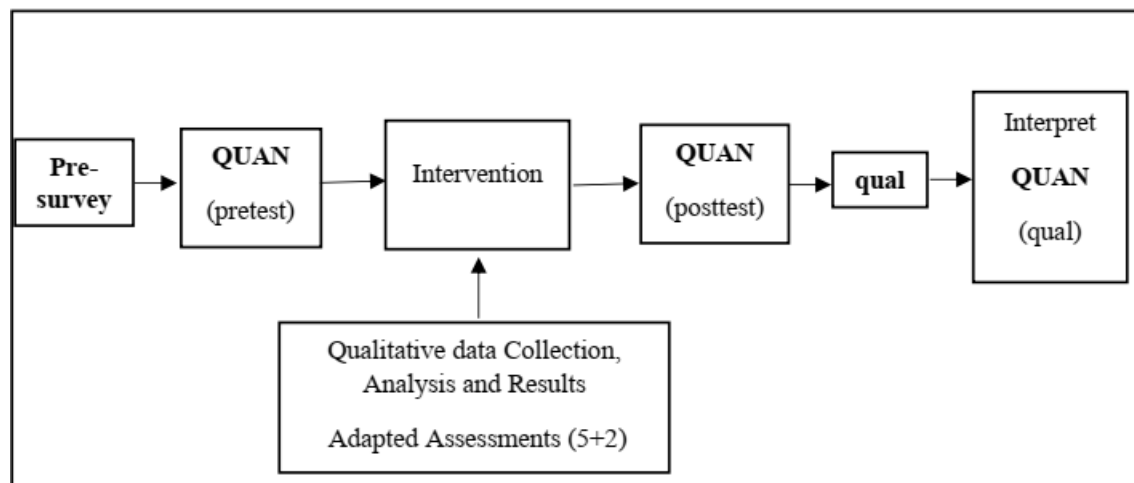
Figure 3.1 *The mixed methods intervention design of the current study*

Qualitative data, a secondary component within the experimental mixed-method design, is considered valuable since the data provides additional information regarding the participants' performance, perceptions, and understandings on the subject. On the other hand, qualitative data collected after the intervention is useful as well since the study had been conducted amid the COVID-19 pandemic. That is, considering that the current, quasi-experimental study is susceptible to a number of outside factors (e.g., a history threat, the "digital divide", lack of motivation amid the pandemic, etc.); qualitative data could provide more specific information regarding factors; and thus, possible causes for why the intervention might have been ineffective.

For the current study, qualitative data has been collected within and post-experiment; whereas collecting the data within the experiment, has enabled the researcher to analyze students' performance, their understandings of the subjects, and particularly their grasp of the instructional approach introduced within the intervention, namely COR's lateral reading strategy. Moreover, qualitative data collected within the experiment enabled the researcher to track students' learning progress and adjust instructional material, i.e., make modifications whenever required; on the other hand,

collecting data after the experiment, enabled the researcher to realize pitfalls of the intervention as well as gain insights about participants' overall perceptions on the learning and teaching.

The table below provides a better representation of the data collection process.

Table 3.1 *Data Collection Tools*

Data Collection tools	Type of data	Number of items/questions
Pre-survey	qualitative	3 (2 closed and 1 open-ended question)
New Media Literacy Scale (NMLS) Pretest-Posttest	Quantitative	35 items. 5-point Likert scale, 4 dimensions. Koc and Barut (2016)
Information Literacy Self-Efficacy Scale (ILSES) Pretest-Posttest	Quantitative	40 items. 7-point Likert scale, 7 domains. Kurbanoglu, Akkoyunlu and Umay (2006)
Assessments (COR)	Qualitative	7 formative assessments (5+2) 5 foundational and 2 parallel
Survey	qualitative	6 questions (4 open-ended and 2 closed-ended questions)
Semi-structured Interview	qualitative	6 open-ended questions

The researcher refers to qualitative data collected via Google Forms within the study and after the study as student feedback. In this context, students were meant to be beneficiaries of the particular experiment; and therefore, collecting feedback about their experiences with the learning has been considered essential since collected feedback could guide improvements and empower positive change in future courses. Qualitative data collected via formative assessments within the study and survey data collected after the study has been referred to as student feedback. In this context, since a particular intervention has been conducted as a part of a lesson, the researcher conducting the study, was rather a "covert" instructor. In other words, the researcher could only present instructional materials, collect and analyze students' responses (data). Here, intervention conducted within a compulsory course is considered as "instructor-paced"; and accordingly, by using the phrase "student feedback", the researcher in this context, demonstrates that particular intervention is an asynchronous study where, student

feedback refers to (a) students' responses for the assignments (formative assessments), their informal comments, perceptions provided within these assignments, and (b) students' perceptions of the quality of learning after the process (intervention), as well as students' perceived learning outcomes at the end of the study.

Experimental design in the current study is a one-group pretest-posttest design, a type of quasi-experimental design that lacks a control group; a design where a pretest is administered and followed by a treatment and a posttest (Creswell & Creswell, 2017, p.273).

One-Group Pretest-Posttest Design has been adapted since the current research is designed to "change attitudes, behavior, or knowledge that are unlikely to change without the introduction of an experimental treatment" (Mertens, 2014, p. 133); here, treatment is online instruction (intervention). Moreover, a particular design had been adapted due to the ongoing COVID-19 pandemic, atypical situation, where the researcher had no alternative but to conduct an experiment without a control group.

The experiment conducted within the mixed method involved teacher candidates studying at the Department of Computer Education and Instructional Technologies. To measure the effects of a particular intervention, reliable instruments had been administered before and after the experiment. That is, the researcher administered two independent and reliable scales, namely New Media Literacy Scale (NMLS) and Information Literacy Self-efficacy scale (ILSES) to measure a change in behavior and knowledge before and after the intervention. Besides administering the scales, the researcher, prior to pretest, and thus intervention, has introduced an online survey that included three questions. The questions had been administered in order to find out (a) students' prior familiarity with fake news phenomenon (b) students' prior education on media literacy and (c) students' social media preferences.

Semi-structured interviews conducted with three volunteers, and an open-ended survey conducted at the end of the study, were carried out for several reasons; particularly, (a) to enhance interpretation of the experiment and (b) to reveal potential drawbacks of the intervention (c) to assure the validity of the study. In this context, Creswell and Creswell (2017) argue that qualitative data collected after the intervention, help researchers to "a) understand why particular results had occurred (positive or negative results); b) understand how a context (here, asynchronous online learning) might have influence the outcomes; c) explain variations in outcomes responses "(Creswell &

Creswell, 2018, p. 311). In other words, qualitative data truly enriches and helps to validate the results of an intervention.

3.2 Setting

The current study had been implemented online, and yet originally had been designed for a face-to-face learning environment. A course of study had been carried out entirely online through the Canvas learning management system (LMS), a ubiquitous platform that enabled instructors to deliver learning and adjust the learning considering the students' performance. The platform, suggested by the university considering the COVID-19 pandemic induced distance education, allowed the researcher to administer instructional materials on time and track the progress of students asynchronously. In this context, participants assigned to the intervention received course materials for 7 consecutive weeks.

Besides Canvas LMS, the researcher delivered students' assignments via Google Forms. Links to the assignments, i.e., Google Forms have been available on Canvas LMS. In other words, formative assessments have been delivered online, presented on Canvas LMS as assignments' links that led students to Google Forms, a free survey administration software. Accordingly, since students' learning occurred entirely online, a particular process "a learning, that involved technology in any way whatsoever", can be described by one broad term and that is, e-learning (Reiser & Dempsey, 2012, p. 282). More detailed information about particular e-learning, the researcher provides at upcoming sections.

3.3 Participants

Final year undergraduate students studying at the Department of Computer Education and Instructional Technologies at the Faculty of Education were the main participants of the study. Being recruited from a public university located within the central part of Turkey, undergraduates had been selected by convenience sampling. Nonrandomized sampling criteria, practical in real-life, included a group of students enrolled in a compulsory course, offered for senior students studying at the Department of Computer Education and Instructional Technologies. Nevertheless, since the focus of the study is fake news, i.e., misleading information spreading online; and since the researcher aims to enhance digital literacy skills within media literacy intervention for

prospective teachers, students studying at the CEIT department, might also be regarded as chosen by purposive sampling.

The experimental design within the mixed method included a total of 18 subjects. Referred to as "pre-experimental" design, particular quasi-experimental design within the mixed-method intervention design, lacked a control group and randomization, and for this reason, this type of design is weak and rather affected by internal validity. Moreover, since the number of participants is inadequate, the generalization of the results of the study is rather challenging. The lack of a control group had been acquitted by the decrease in the number of students studying at the Department of Computer Education and Instructional Technologies as well as the COVID-19 pandemic.

Prior to intervention, participants had been introduced to the objectives of the study and the expectations of the researcher regarding the participants' responsibilities. Thus, the candidates had been informed about presentations to be read and online assignments to be fulfilled. Provided with informed consent forms, those who were eager to participate in the study had been compensated with course credit. Since the study has been conducted amid the pandemic, the number of the participants has been unstable, that is, some students were absent for some weeks (see in the table below).

Prospective teachers who have been chosen for this study had been chosen specifically, that is to achieve a multiplier effect in conjunction with convenience sampling. In this context, UNESCO promoting "MIL Curriculum for Teachers", a framework adapted within the study, also focuses on teachers since organization believes that the teachers would facilitate fundamental literacies among their students and, in turn, lead to societies literate; to put it simply, the teachers are potential multiplier effect (Wilson et al, 2014). Moreover, as Chaung and Xu (2016) argue, to avert further exploitation by media, teachers should play a key role, i.e., be involved in educating responsible citizens, and be accountable for students' media literacy. Shortly, no one but teachers together with parents would be responsible for the negative effects of media on children since education starts in a family and only then take place in schools.

The age range of the target audience varies between 20-25 years, and thus almost all participants included in the study were born after 1997, suggesting that the candidates can be regarded as "digital natives". Moreover, considering gender distribution among the subjects only 3 out of 25 students enrolled in a study were female. That is, the vast majority of the participants are male.

Since the researcher followed a mixed-method intervention design that included one group pretest-posttest design, the experimental design required to dismiss missing data before conducting analysis, and thus, only 18 out of 25 subjects' data were included for the following analysis. In other words, 18 students' data had been subjected to analysis considering the experiment, i.e., 18 students' data has been subjected to analysis within New Media Literacy Scale (NMLS) and Information Literacy Self-efficacy scale (ILSES); since data of 7 students has been considered as missing; researcher could not obtain that data at pre-intervention or post-intervention.

To better illustrate the number of participants, the researcher provided a detailed description in the table below.

Table 3.2 *The total number of participants for each assessment.*

Data Collection Tool	The total number of participants
New Media Literacy Scale (NMLS) Pretest-Posttest	18
Information Literacy Scale (ILSES) Pretest-Posttest	18
1. week assessment (COR)	22
2. week assessment (COR)	22
3. week assessment (COR)	20
4. week assessment (COR)	22
5. week assessment (COR)	17
6. week assessment (COR)	21
7. week assessment (COR)	14
Survey	20
Semi-structured Interview	3

3.4 Measurement Instruments

3.4.1 Self-efficacy scales

Bandura (1995, p.2) defines self-efficacy as "the belief in one's capabilities to organize and execute the courses of action required to manage prospective situations" and reach a conclusion that perceived self-efficacy, i.e., individuals' beliefs determine their behavior. Moreover, Bandura (1995; 1997), furthering his theory that is supported by empirical studies, suggests that perceived self-efficacy significantly affects individual

self-development, change, and adaptation (Bandura, 2012), since the belief (confidence) reflects one's capacity and approach to challenging situations, tasks, and goals. Thus, higher self-efficacy perceived (and reported in self-efficacy scale) by an individual, denotes a higher confidence level, a willingness, higher motivation (required) to tackle a challenge; and thence, respective insistence (and even competence) of the individual in respect to execution. In other words, perceived self-efficacy, beliefs of an individual for an ability (capacity), the potential for execution would rather directly affect actual performance (achievement), since those who genuinely believe in relevant competence, rely on their personal abilities (attributes) to perform a particular task, and thus considers that the task can and would be mastered. Accordingly, instead of avoiding the task, individuals with higher levels of perceived self-efficacy, would address the task, tackle the challenging problem, and put forth the effort to achieve the goal. In other words, based on self-efficacy theory, mastery expectations, to a great extent determine a behavioral change (Sherer et al. 1982).

Considered as one of the most cited and researched topics in psychology, Bandura's self-efficacy (1997) theory significantly impacted the literature (Livinţi et al., 2021). Thus, the theory, cited by researchers from diverse areas tens of thousands of times, was found to be a factor that determines performance (achievement), including academic performance and self-regulation.

Based on numerous empirical findings and arguments for self-efficacy theory, the researcher decided to assess the effects of a particular intervention on the subjects by means of two self-efficacy scales, namely NMLS and ILSES. Thus, scales used before and after the intervention aimed to assess the statistical differences in subjects' scores. The two scales, developed and validated by respective researchers, have been specifically designed to assess competencies about media literacy and information literacy.

The scales are expected to demonstrate particular factors (competencies) that have been affected by the intervention. In other words, the researcher utilizes the scales to discover to which and to what extent the intervention affects the subjects' relevant knowledge and abilities. Thereby, any significant difference in any of the items of both scales would indicate the change, i.e., alteration in subjects' behavior, identifying and revealing particular skills affected by the intervention process.

In this context, since the aim of the researcher is to raise awareness on the subject of fake news by instructing the students to assess the reliability of online media and

information, the statistical differences (perceived self-efficacy shifts) are expected to emerge and thus be observed in items related to "consumption" of the media and information rather than "production".

3.4.2 New media literacy scale

Considering that the fake news, disinformation, and misinformation spread over the Internet and on social media platforms in particular, in order to boost engagement rates, assessing students' critical skills of media literacy, is fundamental. Moreover, media literacy skills should be assessed considering the new media environments, i.e., social media environments rather than traditional, legacy media environments since the digital natives, was born and raised surrounded by the new media.

Different from the old media, new media encompasses features such as "ubiquitousness, digital interactivity, creative and collective participation, networkability, data manipulation, modularity, hybridity, and virtuality" (Koc & Barut, 2016, p. 835). Thus, to assess the media literacy skills of the new generation, i.e., digital natives, the characteristics of the new media should be taken into consideration. Accordinly, Koc and Barut (2016) argue that old media literacy considers merely the consumption of media and thus aims to instruct learners "about media and how to access and understand its contents", whereas new media literacy, include a set of skills related to "(re)creating media contents and sharing these media with others (i.e., producing media)" (p. 835). Thus, researchers argue that cultivating a set of skills related to digital and media literacy, such as "consumption and (re)production of digital media content", are essential to "survive in the digital era" (Koc & Barut, 2016, p. 834).

Proposed for the study, New Media Literacy scale (NMLS) developed by Koc and Barut (2016) comprises of 35-item that meant to assess skills concerning "new media", where the new media is defined as "technology-based socio-cultural platforms in which any messages are digitally coded and distributed by any users" (p.835). The particular scale assesses a set of skills with respect to new media and thus encompasses four "components", fundaments of the new media literacy namely: "functional consuming, critical consuming, functional prosuming and critical prosuming" (Koc & Barut, 2016, p.835).

Taking into account that the primary objective of the current study is to raise awareness on fake news through enhancing digital and media literacy skills, the

researcher, designing a particular course of instruction, sought to assess the new media literacy skills objectively, that is by administering a pre and a posttest, where the test is a reliable measurement, a scale that would point out at particular learning (a difference), that is students' media literacy competencies (relevant items) that might have been affected by the treatment. Specifically, researcher, by using particular scale, has expected that the skills directly related to critical consumption of the media content, that is the NMLS items related to "functional consuming" and "critical consuming" would indicate statistically significant difference (positive difference), since the researcher, implementing intervention, has aimed to enhance critical thinking skills as well as the relevant skills of consumption of online media; and accordingly, the set of skills related to (a) "functional consuming" that assess the "abilities to access produced media content and understand its textual meaning"; (b) "critical consuming" designed to assess individual's "abilities to analyze and interpret socio-cultural, economic, and political consequences of media content" along with the "ability of questioning media messages in terms of their purposes, underlying ideologies, social values, and representations of power" in NMLS , expected to demonstrate significant difference in the posttest (Koc & Barut, 2016, p.835).

Available in Turkish and English, the NMLS assessing media literacy skills such as access, utilization, creation, and the consumption of online media, had provided the researcher a data on subjects' perceived media literacy skills, specifically considering the "new media". Thus, the researcher providing the current scale in Turkish, had a chance to analyze subjects' media literacy perceptions without a need to adapt to a different scale, since the NMLS encompasses skills considering social media platforms, the second generation of the Internet (interactive and dynamic world wide web) that includes diverse Web 2.0 tools such as Facebook, Instagram, Twitter, and YouTube.

Although self-efficacy scales assess beliefs, there are a number of arguments, addressed to the advocates of self-efficacy scales, stating that the self-efficacy scales do not correspond to, i.e., neither demonstrate nor indicate actual abilities; however, Bandura (2012) refuting the arguments, propound that the disagreement regarding inconsistency in findings is based on inappropriate administration of the scales as well as other external factors, and once again, mentions that the numerous findings validate the importance of individual's self-efficacy (Bandura, 2012).

Nevertheless, since the researcher had utilized adapted COR assessments, behavior alteration, perceived change in learning assessed by NMLS, i.e., the difference in the ability to critically evaluate online media and information, is observable, and can be identified through the analysis of students' responses, i.e., using the rubrics (performance-based assessment). On the other hand, since students' responses, though gauged according to the rubrics by two independent raters might be a subject of debates (deemed as subjective and unreliable); truly validated quantitative measures, in this case, self-efficacy scales, has been considered reliable measurement tools, and accordingly adapted due to precedence, that is, considered as a priority for the researcher.

Taking into account that the intervention had been implemented without a control group, to enhance the credibility of observed behavior change (difference), as well as to assure, validate findings of the intervention, the researcher had utilized two similar and yet different self-efficacy scales, not to mention, complementary qualitative methods such as online survey and semi-structured interviews.

Due to the overlapping nature of similar concepts, that is the information literacy and the media literacy, New Media Literacy Scale (NMLS) and Information Literacy Scale (ILSES) assess several corresponding skills and thus have akin scale items since both of these literacies focus on individual's abilities to assess and interpret the meaning. Here, it is important to note once again that the very word literacy has a deeper significance and that is to "understand the meaning", in this case, the meaning of the social media message. Nevertheless, contrary to NMLS, ILSES, assess individual information literacy primarily regarding the old media, and thus considered as rather outdated (2006) since the scale, does not include new media environments; and had been developed and validated before a proliferation of currently popular social media platforms. The ILSES, administered before and after the intervention, has been considered complementary to NMLS, aimed to assess students' information literacy self-efficacy levels. Thus, the ILSES, used mainly for triangulation.

The scales utilized before the intervention, pre-test, and after the intervention, post-test, are the main instruments, measurements of the study. Hence, quantitative data collected by means of scales would provide the researcher with reliable data, and evidence regarding the effect of the intervention. Effect in this context is the statistical difference, negative or positive, that had been observed at the end of the study.

Students' awareness of how media works and what it conveys, or media and information literacy in general, affect their abilities to evaluate online information. That is, the greater awareness, to a certain extent would result in better detection of the false content and vice versa, since the subjects would question the reliability of the content. On the other hand, since perceived knowledge does not exactly correspond to actual knowledge, self-perceptions might alter, i.e., increase or decrease after the intervention since subjects might experience a "conflict" (cognitive dissonance) and realize lack of abilities or vice versa and thus perceive a difference between initial and final ability.

3.4.3 Information Literacy Self-Efficacy Scale (ILSES)

To assess students' information literacy, the researcher had utilized a supplementary scale developed and validated by Kurbanoglu, Akkoyunlu, and Umay (2006) designated as Information Literacy Self-Efficacy Scale (ILSES). Comprised of 40-item, the Turkish version of the ILSES had been administered before and after the intervention. To utilize the scale, the researcher had contacted one of the authors of the ILSES and ultimately received permission to utilize the scale. Permissions to use NMLS (Koc & Barut, 2016) and ILS (Kurbanoglu et al., 2006) are provided in the Appendix section.

Kurbanoglu et al. (2006) reviewing the concept of information literacy, reached a conclusion that information literacy encompasses a number of abilities that can be collected under seven domains, or rather 7 "sets of interrelated skills" of information literacy. Thus, after several phases of developing the instrument, researchers had issued a scale of 40 items that meant to assess an individual's "level of efficacy on issues related with the information (to find, use and communicate information)"; and covers 7 domains of information literacy, namely: "A. Defining the need for information; B. Initiating the search strategy; C. Locating and accessing the resources; D. Assessing and comprehending the information, E. Interpreting, synthesizing, and using the information; F. Communicating the information; G. Evaluating the product and process " (Kurbanoglu et al., 2006, p. 741).

The ILSES is one of the most widely used instruments used to assess information literacy and the fact that the scale is designed and developed in Turkey, made it convenient for utilization. Nevertheless, the scale developed more than 15 years ago is a supplementary to New Media Literacy Scale (NMLS), adapted in order to assess a

difference in subjects' beliefs before and after the intervention (i.e., after the actual performance), not to mention, that additional source of data, would ensure the validity of the study (for triangulation).

The researcher expects that the significant difference after the post-test will be observed in ILSES items related to C, D, and E domain, that is, "C. Locating and accessing the resources; D. Assessing and comprehending the information, E. Interpreting, synthesizing, and using the information", since the intervention focuses on cultivating specific (COR) skills and MIL competencies, directly related to discerning the false content (media and information), and thus directed to enhance these abilities by means of improving skills of evaluation, i.e., assessing the reliability of the content. Thus, ILSES items related to COR skills and MIL competencies, namely, locating reliable sources, assessing online information, and interpreting the information; assumably would demonstrate a difference.

3.4.4 Rationale for using self-efficacy scales.

Considering argument (Ptaszek, 2019) that self-efficacy scales assessing self-perceived knowledge do not represent actual performance since evaluating fake news is a complex process requiring analytical skills. In other words, since "substantial evidence suggests that actual knowledge and perceived knowledge are entirely separate concepts" (Jones-Jang et al,2019, p. 13), data collected by means of self-efficacy scales, is not only collected data within the study, and yet self-efficacy scale data is the main reliable data. The data from these scales would provide the researcher valuable information on subjects' perceptions, beliefs formed after the intervention. Since NMLS is a valid and reliable instrument, a particular scale would demonstrate the extent of the effectiveness of adapted formative assessments. In other words, the scale could indirectly indicate the validity of the adopted assessments.

Since the researcher uses pretest and posttest to assess subjects' beliefs, an intervention designed to assess and promote literacy skills could affect students' perceptions in both ways, negatively or positively, since students involved in the task, would come to realize (based on immediate feedback) the extent of their actual performance and thus report an updated extent of perceptions in the posttest. That is, though the researcher assumes that the intervention would positively affect students'

competencies to discern fake news and thus raise awareness of the subjects on the subject matter, subjects' perceptions could vary significantly, shift to either side (positive or negative) of the scales. Beliefs would decrease or increase due to intervention since students would perceive the difference between their beliefs and actual abilities. Hence, students would come to realize which of their competencies are not satisfactory or inadequate to evaluate online information or vice versa.

In this context, researchers at SHEG, testing hundreds of students from different educational levels, had found that those students who reported to "easily spot the fake news online", demonstrated the opposite results on actual tests (Wineburg et al., 2018, p.4). Hence, researchers also conclude that the subjective perceptions and beliefs are not sufficient to tell the difference between real and fake content when it comes to reality and practice. Based on the argument, the researcher designing a particular intervention, the Digital Media Literacy course, in fact, assesses both perceived and actual knowledge.

A research study by Jones-Jang et al. (2019) that compares different instruments and the probability of identifying fake news stories, revealed that only information literacy measurement that assesses the actual knowledge significantly increases the likelihood of identifying fake news. Thus, as the authors conclude, self-efficacy scales measuring perceived knowledge are "neither reliable nor accurate". Similarly, Ptaszek (2019) argues that "although a vast majority" of instruments assess media literacy outcomes based on "self-assessment character", those tools "do not ascertain the competencies of a performance nature" since "despite the acceptable psychometric indicators", performance ought to be assessed objectively, based on practical tasks rather than on responses of "declarative nature" (p.4).

Considering the aforementioned arguments regarding the drawbacks of the self-efficacy scales, alongside the two self-efficacy scales, the researcher analyzes students' actual performance, based on adapted assessments and rubrics. That is, analyzing students' responses based on adapted assessments' rubrics, provided the researcher a data, the performance levels of students for each task. Nevertheless, adapted assessments were used only for formative purposes.

Though the COR assessments and rubrics initially have been translated to Turkish, then passed face validity, and then had been translated to English again. Due to cultural and sociopolitical differences between the US (where the assessments were developed) and Turkey (target country), preplanned scale adaptation of the COR assessments was

canceled. In other words, since the COR assessments gauge students' abilities to assess sociopolitical information online, adapting these assessments to Turkey's context seemed somewhat challenging, since the sociopolitical context and cultural differences of the US and Turkey vary dramatically. That is, assessments were unrepresentative of the target culture, and specifically, target country sociopolitical context.

Accordingly, the researcher has adopted the assessments and rubrics considering target country context and taking into account merely face validity (and to a certain extent content validity) for the assessments. That is, the COR assessments and rubrics adapted for the study had undergone the changes, where the researcher kept the very idea behind the COR approach and had enhanced the underlying digital literacy skills and instructional approach. As a result, by referring to adaptation, i.e., adapted assessments, the researcher means only a conceptual replication.

Since the current study followed a mixed method, after the experiment, the researcher collected qualitative data to support, justify and enrich quantitative findings. Thus, rich qualitative data collected within (students' responses) and after the intervention (feedback and semi-structured interviews), provide a base, justification, and additional data for argumentation regarding positive effects of the intervention; results of the intervention that primarily has been measured by means of self-efficacy scales.

 Here, it is important to note that both self-efficacy scales are reliable instruments (Koc & Barut 2016; Kurbanoglu et al., 2006). Qualitative data collected by means of semi-structured interviews, and student feedback (open-ended survey), and students' responses, has been utilized as supportive and interpretative data, aimed to ensure the reliability of quantitative findings.

3.5 Survey

Qualitative data collected during and at the end of the intervention, meant to serve as complementary data, embedded within the experimental design. That is, complementary qualitative data has been collected and analyzed by the researcher for several purposes, such as, to clarify, understand the reason behind negative or positive results of the experiment, illustrate the results, enhance learning materials (in the course of intervention and for subsequent use), explain the subjects' understandings (experience) of the intervention as well as their learning outcomes.

A short survey comprising of 2 dichotomous (Yes/No) and one open-ended question has been administered by the researcher before the pre-test. The aim of the survey was to gather general information regarding participants' experience, that is whether they have encountered fake news before; and whether participants' have been subjected to any media literacy education in the past; whereas open-ended question, has been addressed in order to elicit subjects' social media preferences.

The open-ended survey has been administered after the final assignment, that is, at the end of the learning process. The open-ended survey administered online via Google Forms has been assigned as mandatory and yet allowed students anonymity. That is, students providing the feedback were free to use any nickname and had been guaranteed that the information provided will not be used against them, that is, students were guaranteed that the student feedback would be used to evaluate the intervention process (experiment) and improve learning materials. Richardson (2005) argues that the student feedback, as information gathered from students using the formal tools, enables educators to discover students' perceptions regarding the quality of education, teacher practices, and effectiveness of the teacher himself/herself. Thus, student feedback collected online by means of Google Forms provided the researcher essential data on the effectiveness of the intervention, students' satisfaction with the course of instruction as well as the quality of the instruction. Hence, the data collected by means of a survey administered online, that is via Google Forms, proved to be convenient and cost-effective.

The researcher collecting qualitative data, supposed that the students would provide critical insights, that is, information on the factors that negatively affected their learning, especially considering that intervention initially planned to be implemented in a face-to-face learning environment, ended up conducted in distance mode.

According to Mandouit (2018), teachers collecting student feedback should consider several factors that enhance using the feedback such as "teacher usability, ease of implementation and literature review for feedback tools" (p.757). Considering these factors, Google Forms, adopted for the current study, enabled the researcher to gather student feedback online, and thus demonstrated to be a cost-effective and practical tool for collecting quantitative as well as qualitative information.

According to Hand and Rowe (2001), who has evaluated various methods used to gather feedback the "structured and planned feedback collected in the form of questionnaires, comprising agree/disagree statements and open-ended questions", are the

most practical and effective (Mandouit, 2018, p.757). Based on a particular argument, the researcher addressed students to answer the survey made of "Yes/No and partially" questions, besides the open-ended questions. Here, dichotomous questions were asked in order to elicit the clear distinction of the participants learning outcomes as well as elicit clear opinions regarding their learning experience.

3.6 Interviews

Qualitative data, analyzed and embedded within an experiment design has been collected by means of an open-ended survey, that is student feedback, as well as semi-structured interviews, conducted after the intervention has finished. Semi-structured interviews had been conducted online, one-on-one, by means of Zoom, a cloud-based video communications application.

The qualitative data collected by means of semi-structured interviews had been recorded and subjected to further analysis. In this context, open-ended survey, and semi-structured interviews, considered as similar instruments, had akin objectives and, thus, consisted of somewhat similar open-ended questions, however, considering that the interviews provide individuals opportunity to speak, that is express ideas more naturally, the researcher had been able to elicit more detailed information regarding the subjects' experience compared to the online questionnaire. The semi-structured interviews had been conducted in total with three individuals.

3.7 Data Analysis

3.7.1 Quantitative Data Analysis

The current study followed an intervention mixed-method design; and accordingly, for the experimental phase of the study two scales, namely, New Media Literacy Scale (NMLS) and Information Literacy Self-Efficacy Scale (ILSES), have been administered for a group as a pre-and post-test. In other words, the study involved one group that has been subjected to pre- and post-tests.

Though, initially, 25 final year students studying at the Department of Computer Education and Instructional Technology (CEIT) were involved in the study, the researcher administering scales before and after the intervention, reviewed all the missing values, and included only 18 participants' data for the analysis. Considering the missing

data, 5 out of seven participants did not take the pre-test, joining the intervention at a later date, while 2 remaining, dropped out towards the end, and thus did not take the post-tests. All statistical analysis was carried out by the researcher with IBM SPSS Statistics Version 24 software.

Since the number of the participants is 18; and thus, the sample size is not large enough to conduct a parametric test, based on Pallant (2016) stipulation that reads: the small sample size violates the normal distribution assumption required to perform the parametric tests (p.227), the researcher has performed a non-parametric technique, regarded as an alternative to the Paired-Samples t-Test, namely Wilcoxon Signed Rank Test. According to Pallant (2016), Wilcoxon Signed Rank Test is used with repeated measures, or specifically when the subjects are measured on two occasions (p. 253); in the current study, before and after the intervention.

The pre-test and post-test scores obtained from the subjects were compared to each other in order to identify whether there was a significant difference between pre and post-test scores of the subjects with respect to (1) self-efficacy beliefs about media literacy and (2) self-efficacy beliefs about information literacy.

3.7.2 Qualitative Data Analysis

Qualitative data, embedded within the experimental phase of the mixed-method research, has been collected by means of semi-structured interviews and an open-ended survey. Moreover, qualitative data has been collected within intervention by means of assessments. Semi-structured interviews have been conducted with volunteers whereas an open-ended survey, administered online via Google Forms after the final assignment, has been mandatory for all participants.

Considering a question why the researcher had to collect qualitative data within and after the experiment, the answer is to that question is outlined by Creswell and Creswell (2018, p. 311), "a) to understand why particular results have occurred b) how context might have influenced the outcome, c) to help explain variations in outcomes, d) to receive participants feedback that would help to revise/change the treatment ". In this context, qualitative data embedded within the mixed-method intervention design is a secondary source of data.

The primary purpose of collecting qualitative data was to thoroughly understand whether intervention, achieved its intended purposes. In other words, the researcher

aimed to assess learning from participants' perspective since qualitative data enhances evaluation of the interventions by "adding depth of understanding of program processes and participant outcomes" (Leavy, 2014 p. 480). In this context, qualitative data collected following intervention via interviews and surveys used to judge merits and worth of intervention, and thus aims for evaluation; where the very word evaluation, is a "systematic collection of information "that enables the instructor to assess "a program, improve or further develop program effectiveness" and "increase understanding" on process and outcomes of the program (Patton, 2008, p. 39)

The researcher has analyzed qualitative data in order to better explain statistical results as well as compare quantitative data with qualitative. That is, as seen in the results section, qualitative data has supported the researcher's arguments that are based on quantitative findings. Hence, qualitative data-enhanced interpretations of the outcomes of the intervention, the data have provided the details.

Considering that the researcher adopted formative assessments to promote students' learning, qualitative information gathered in form of a text (narrative) has been subjected to qualitative analysis as well. In this context, Creswell and Creswell (2018), argue that qualitative data collected during the experiment (intervention), help the researcher "a) to understand how participants had experienced the intervention, b) identify potential mediating and moderating factors, c) understand participants' barriers and facilitators; experiences within the intervention" (p. 311).

Furthermore, qualitative data collected within and after the intervention enhanced the validity of the inferences from the study (Kratochwill, 2015; Mertens, 2014;). Likewise, the credibility of any study, according to Kratochwill (2015), is being increased, if the study involves an intervention (Mertens, 2014, p. 210). In other words, methodological triangulation surely enhances a particular study, increases the validity of the study.

Students' perceptions collected as student feedback via Google Forms at the end of the intervention have been collected in order to evaluate the intervention, to understand individual learning outcomes; and finally, to understand what problems students might have faced during the education amid the COVID-19 pandemic. In this context, Richardson (2005) emphasizes that student feedback offers teachers "diagnostic evidence regarding the effectiveness of their teaching" (p.388), along with serving as a "measure of teaching effectiveness for administrative decision-making" (p.401). Thus, considering

that the study involved an experiment, conducted online during the pandemic, students' perceptions would provide the researcher an essential data on the extent of the effectiveness of online learning, factors that might have affected students' learning as well as possible drawback of the learning.

Semi-structured interviews, conducted online via Zoom- a video conferencing software, had been recorded, then transcribed verbatim, and ultimately, subjected for descriptive and thematic analysis. The descriptive coding approach had been adapted for qualitative data analysis since the coding approach is practical, especially when the researcher has to deal with different types of data gathered within one study (Leavy, 2014, p. 593). On the other hand, to analyze data gathered within the intervention, that is qualitative data collected as for formative assessment, the researcher adapted in vivo coding method. In this context, in vivo, has enabled the researcher to "select the words or phrases in the data record" as codes and after repeated analysis, present the codes that appear "significant or summative of what" a student has written (Leavy, 2014, p. 590). To sum up, the in vivo coding, is a form of qualitative data analysis, that enabled the researcher to make accent on the actual spoken and written words of the participants considering the qualitative data obtained within and after the intervention (Manning, 2017); and though the in vivo coding is the most common designation, particular coding approach is also referred to as natural coding, verbatim coding, and literal coding (Saldaña, 2016).

Taking into account that the qualitative data meant to be used to enrich and rather validate quantitative findings, the researcher, conducting qualitative data analysis, rather assigned participants' short phrases, that the researcher found valuable, to the relevant quantitative findings, that is, by considering the NMLS and ILSES items. In other words, to the relevant subject matters, i.e., 'significant' constituents, components of the scales. By analyzing qualitative data thoroughly, the researcher has performed descriptive coding. That is, by taking the participants' own words as codes, by means of in vivo coding, the researcher, to a greater extent, has demonstrated inductive coding (Saldaña, 2016).

Considering the analysis of qualitative data, for interviews, the researcher, first of all, has transcribed the interviews, afterwards, by immersing within the data, the researcher, strived to gain detailed insights into the central phenomena being explored within the study. Subsequently, the researcher, developing a data coding system, as

mentioned above, has linked codes, for he sought to form overlapping suggestions. Likewise, the qualitative data collected within assignments have been analyzed based on the guidelines of Morse and Richards (2002). That is, the researcher has repeatedly reread the qualitative data, immersed within the data so that he could gain detailed insights of the participants, in the light of the questions addressed within the study and the central phenomena being explored. Here, it is important to note that, the qualitative data collected within assignments, is large in amounts, and analysis of the data though was time-consuming and complex, provided critical insights. The key point here is, in order to link codes, i.e., individuals' phrases to quantitative findings, one should analyze quantitative findings at first and then, being fully aware of the results, reread the qualitative data, and strive to identify significant phrases (codes), keeping in mind the quantitative findings.

3.7.3 Kappa inter-rater reliability

To ensure the credibility of the assessment process, the researcher involved one more rater, a graduate student from the faculty of communication sciences. In other words, to check the reliability of categorization, the *Kappa inter-rater reliability test* was performed. In this context, the *Cohen's Kappa* coefficient is calculated to check the consistency and reliability in the measurements where the two raters (coders) encode using the same coding ruler; herein, adapted rubrics. Coefficient reveals the consistency between the raters and thus ensures consistency in the categories. The coefficients obtained are shared in the table below.

Table 3.3 *Cohen's Kappa coefficient results*

Assessment Number	Kappa Value
1. Week Assessment	.784
2. Week Assessment	.761
3. Week Assessment	.808
4. Week Assessment	.837
5. Week Assessment	.791
6. Week Parallel Assessment	.824
7. Week Parallel Assessment	.781

The coefficient, takes a value is between 0 and 1, whereat values above 0.21 are considered as acceptable, values between 0.41-0.60 are moderately good, between 0.61-0.79 are good, and values above 0.80 are very good, and therefore the value above 0.80 means that consistency among raters is very good (Kılıç, 2015, p.143). Considering that the Cohen's Kappa coefficients obtained in this study vary between 0.76-0.83, consistency among the raters within the study is between good and very good value.

3.7.4 Researcher Role

The intervention was administered entirely online, followed a schedule, and thus, even though the researcher shared MIL presentations, and related learning materials in advance, he had to set due dates for the assignments. Accordingly, since the researcher has set due dates for assignments, the online course, in this context, intervention, is respected as an instructor-paced online course (Kocdar et al., 2018). Unlike, self-paced courses that offer flexibility in terms of time and place, instructor-paced online courses offer flexibility regarding a place. Following the instructor-paced online course model, students enrolled in the compulsory courses were required to follow a schedule shared on Canvas LMS and submit responses to the assignments considering due and availability dates.

Taking into account the learning process, by providing feedback, the researcher being an instructor (instructional designer) of the online course, served as a (covert) model supporting asynchronous learning across learners' self-regulation activities; and rather acted as an external factor that has guided the learners throughout the learning (Hadwin et al., 2010; Kocdar et al., 2018). In other words, the instructor, by adopting a "guided-inquiry" approach considering "guide-discovery" e-learning architecture, has aimed to support an individual's "self-regulated" learning process, by adapting guiding elements for the assessments, i.e., feedback. In this context, self-regulated learning is "a strategic and metacognitive behavior, motivation, and cognition aimed toward a goal" (Hadwin et al., 2010, p.795); where a learner, to be considered as "self-regulated", should demonstrate an "effectively engagement in personal learning processes metacognitively, motivationally, and behaviorally" (Zimmerman, 1989, p.329).

Based on the argument, students' motivation to learn (amid pandemic), played an important role in learning outcomes, and thus, considering the intervention, collecting

qualitative data, within and after intervention, and analyzing that, could have demonstrate the researcher possible reasons behind successful or failed learning. That is, qualitative data could demonstrate likely causes why the learning process has reached or has not reached effective outcomes, not to mention the factors that might affect the students' motivation during their individual learning experience. In this context, since the study followed a mixed-method experimental design, qualitative data collected within and after the experiment, aka intervention, has been tailored considering the experimental design. That is, regardless of the fact that the researcher has collected tens of pages of qualitative data within the experiment, only those data codes that could enhance understanding of the quantitative outcomes have been highlighted within the findings section of the study.

Though the researcher, had delivered the intervention that has been embedded within a compulsory course, the researcher, was not an 'insider' but rather an 'outsider' within the class, since relevant learning materials, e.g., presentations on MIL, the COR assignments, were altogether delivered asynchronously. To elaborate on that issue, students taking the course, though were introduced to the study as well as expected outcomes, not to mention, that they were provided with consent forms, had never seen the second instructor. That is, the researcher, delivering materials asynchronously within the compulsory course, did not get to know the participants personally and thus, considering the researcher's role, was not insider-researcher but rather outsider, or even the 'covert' observer. In other words, for the intervention has been delivered as a part of the course, i.e., embedded within the course, the researcher, was rather an 'incidental' instructor whose role was to assign homework, and collect data, besides presenting learning materials on MIL. In this context, it is important to note that the assignments did not affect the students' course grades considering that the study was voluntary. Moreover, those who participated, to some extent, were compensated with extra points.

Considering the ethical procedures, the researcher, acting in the best interests of the participants, presented the consent forms prior to intervention. Moreover, for interviews held post-intervention, the researcher, supplied interviewees with additional informed consents. In all of these forms, the researcher guaranteed participants' confidentiality.

3.8 Instructional Materials

3.8.1 COR instructional approach

Assessments and the instructional approach suggested by Stanford History Education Group (SHEG) for college-level had been adopted and utilized as the main instructional material of the study (Wineburg et al. 2018). Guided by strategies practiced by pro-fact-checkers, the SHEG developed the COR curriculum that aims to enhance individuals' abilities to evaluate online sources. In this context, the researcher adopted the COR assessments and designed rather authentic assessments. Together with the suggested instructional approach, i.e., the 'lateral reading' strategy, the researcher promoted lateral reading strategy within the intervention as a central component designed to further students' digital literacy competencies. Specifically, the COR approach and unique assessments had been utilized within the intervention, to empower students to effectively evaluate digital content. Thus, to promote students' digital literacy skills, i.e., the COR skills, that would help to "effectively search for, evaluate and verify social and political information online" independently (McGrew et al., 2018, p.166), the researcher integrated the COR strategies, i.e., lateral reading and click restraint, by means of formative assessments, within media literacy intervention.

The researcher decided to adapt the SHEG instructional approach known as 'lateral reading' since unlike traditional 'checklist method' such as CRAAP that is widely used to assess the reliability of information sources, a particular fact-checking strategy is proved to be effective when it comes to assessing the credibility of online sources; not to mention that the strategy is widely practiced by pro-fact-checkers (Wineburg et al. 2018). According to SHEG researchers, the "vertical reading" (checklist) strategy is ineffective for information found online, i.e., digital landscape. Hence, as researchers argue, instead of the checklist method, or in other words, vertical reading (described as assessing a digital content at a time using a checklist); students should adopt a "lateral reading" strategy that considers finding and comparing different sources of information on the Internet. To elaborate, researchers suggest leaving an unfamiliar site immediately, and then 'reading laterally', i.e., opening up multiple tabs to research the author and organization behind the information source (site). Reading in such a way, i.e., laterally, as fact-checkers do, did prove to be more practical and effective considering all kinds of information sources found online (Wineburg et al. 2018).

According to SHEG researchers, Civic Online Reasoning (COR) learning materials, and specifically, instructional approach and assessments are "unique" since the new approach is more effective compared to other information assessment strategies. The uniqueness behind the instructional approach is based on the fact that researchers at SHEG, observed pro, and thus, refined basic fact-checking strategies into an instructional approach (Wineburg et al. 2018).

Authentic assessments and suggested fact-checking strategy had been adapted for the current study on purpose since a focus of the study is fake news; and given that fake news, as rather a generic term that is widely used to refer to online misinformation and disinformation, adapted assessments, used within the current study, as researchers emphasize, meant for educators who aim to measure students' abilities to evaluate digital content, and further students' digital literacy skills (McGrew et al., 2018, p.166). In this context, adapted COR assessments utilized within the intervention for formative purposes are rather conceptual replication of the original assessments. That is, the researcher designed authentic assessments based on original COR assessments, and yet, designed assessments differ since the assessments were meant to be used for formative purposes and were contextualized accordingly. In other words, assessments utilized within the study were used as formative assessments, unlike in the original studies, and thus, are not exact copies of the original assessments. In this context, though the researcher followed the steps required for adaptation of assessments, due to significant differences in the sociopolitical landscape of the target country, designing authentic assessments based on the original assessments has been considered more practical. To elaborate, adapted assessments used for formative purposes are considered authentic assessments since the researcher designed assessments that aimed to "replicate the tasks and performance standards typically found in a real-world" (Villarroel et al., 2018, p. 840). Here, authentic, formative assessments were delivered remotely and involved constructed-response tasks. The tasks were meant to measure students' COR competencies, i.e., the skills that the young generation requires to be "civically engaged in a digital age" (Breakstone et al. 2019, p.9). In this context, authenticity is viewed as "a key characteristic of assessment design which promotes learning" by educators; and thus, authentic assessments used within the current study serve as a model that promotes digital literacy skills needed in the real world. In other words, assessments used in the current study provide students a

space to practice digital literacy skills and media literacy competencies that have value in real life.

The COR curriculum materials utilized within the study, to a certain degree, has been developed as a reaction to Post-Truth Politics, and particularly as a response to fake news, a phenomenon that has been regarded as "a threat to democracy" in the US (Wineburg et al. 2018). Accordingly, since fake news is a global phenomenon (Righetti, 2021), adopting the idea behind the COR, and particularly, lateral reading strategy and adapting the assessments, accepted as worth trying.

Considering the reasons for developing the curriculum, the COR curriculum had been developed, since researchers at SHEG, testing thousands of students, had come to a conclusion that the "digital natives" are incapable to evaluate even "basic digital sources" (Wineburg et al. 2018., p.4). Hence, in order to help students to navigate through the stream of disinformation and help the digital natives to " become smarter consumers of digital information", researchers at SHEG, following thorough development, "distilled pro-fact-checkers strategies into an instructional approach", and named that strategy as 'lateral reading' (Wineburg et al. 2018., p.4).

The strategy considers "closing up the unknown website after a quick review and opening new tabs in a browser to search for other reliable sites that can aid in assessing the credibility of that unknown site" (See Appendix-D). Moreover, amid "searching for, evaluation, and verification", particular strategy entails focusing on addressing three general questions: "1. Who is behind the information? 2. What is the evidence for its claim? 3. What do other sources say?" (Wineburg et al. 2018., p.5). These 3 questions, addressed online within the fact-checking process, are considered as core competencies of COR (McGrew et al., 2018).

For the current study, based on these three questions, aka COR competencies, students were expected to execute lateral reading (fact-checking) strategy and initiate comprehensive online research. Moreover, students were expected to be aware of another complementary strategy practiced by pro-fact-checkers, which has been specified as 'click restraint'. The strategy can be described as to search deeper, i.e., scanning and skimming further, going beyond the first result page along with analysis, comparing and contrasting different sources of online information. That is, students, aware of how the internet works (consider the search algorithms), had been expected to be smart enough and "go beyond" the first page of Google.

To motivate students, up-to-date digital content and quite relevant subjects had been considered within the assignments. Hence, authentic assessment has been utilized within the study since such assessments "replicate the tasks and performance standards typically found in the real world" not to mention that authentic assessments "have a positive impact on student learning, autonomy, motivation, self-regulation, and metacognition" (Villarroel et al., 2018, p. 840). To devise authentic assessments, the researcher had analyzed the more recent media landscape and popular social media platforms among participants for relevant trendy content. Furthermore, the researcher had analyzed fact-checking sites such as Teyit.org and Malumatfurus.org for relevant fake content that might incite the interest of the participants.

The researcher utilized authentic assessments within the intervention only for formative purposes. Hence, assessments were meant to further students' digital literacy skills. In this context, considering the objectives of authentic assessments, after each assessment, the researcher presented feedback. Here, feedback presented online via Google Forms as a pdf file presentation is "formative feedback", designed to demonstrate to students a correct procedure (steps) students are required to follow for effective evaluation of online content. In other words, online feedback delivered after the submission of response is the feedback that aimed to enable students to improve their fact-checking strategies. That is, instructor feedback is provided on" main processes needed to understand and perform tasks" (Hattie & Timperley, 2007, p. 89). Here, "formative feedback" is presented as an answer for the task, designed to serve (enable and empower students); and is referred to as "information communicated to the learner that is intended to modify students thinking or behavior to improve learning" (Shute, 2008, p. 153).

The summary of the tasks and requirements that students were expected to execute within the study is presented in Table 3.4; whereas table 3.5 provides details of the assignments, students were required to follow; relevant tasks and descriptions.

Table 3.4 *College Level Assignments and Requirements*

1. Evaluation of an article	Students are expected to decide the reliability of a website by searching the evidence and clues to support their views on an open web.
2. Researching a claim	Students are expected to verify a claim about a controversial topic by searching online for the evidence.
3. Checking the reliability of a website	Determine the trustworthiness of the partisan website. Students analyze and evaluate the information found on a website.
4. Evaluation of a social media video	Students watch and identify the strength and weaknesses of the online video found on social media.
5. Evaluation of claims on social media	Students read a tweet or a post and explain why the claims might or might not be a useful source of information.

Table 3.5 *Assessments and gauged competencies within the study*.

Assessment and Competency	Description
Social Media Video Tasks Assessing "Who Is Behind the Information?"	Evaluate the strengths and weaknesses of a video posted on YouTube. Video uploaded and shared by *Murat Muratoğlu* (*a journalist) on a YouTube channel.
Website Reliability Tasks Assessing "Who Is Behind the Information?"	Using any online sources, explain whether a (*sectarian) website *Bizimaile.com* is a reliable source of information; particularly on the subject of children's health.
Claims on social media. Task Assessing "Who Is Behind the Information?" and "What Is the Evidence?"	Evaluate the strengths (Question 1) and weaknesses (Question 2) of a tweet. Students read a tweet by *Ufuk Akcigit* (*Professor of Economics) and explain why the tweet (related to the subject *"Women in Academy"*) might or might not be a useful source of information.
Researching a Claim Task Assessing "What Do Other Sources Say?"	Use an open Internet search to decide whether *"Mel Gibson became a Muslim"*.
Article Evaluation Tasks Assessing "What Do Other Sources Say?"	Explain whether an (*opinion) article, a column regarding *Istanbul Convention* is a reliable source, using any resources available online.

For the first assessment researcher selected a topic related to the economy. The task presented to subjects, expected to assess students' ability to find "Who is behind the information?". That is, the researcher addressed the students to evaluate the video on YouTube related to Turkey's economy, uploaded by Murat Muratoğlu, a journalist working at one of the leading newspapers in Turkey. The video created under a nickname is about the economy, and particularly, about the politics of the central bank and a forecast regarding inflation, dollar exchange rate, etc. The particular video had been chosen on purpose since the monetary policies of the central bank had been one of the most debated topics in the news. Though the video had been shared on Muratoğlu's official channel, students are expected to find critical information about the author (personality) of the video, that is, who is behind particular YouTube persona. In other words, a piece of factual information regarding persona, whether the person is competent to argue about the economy, educational background, and experience; not to mention the fact that he is a journalist working for one of the highest-selling Turkish newspapers (left-of-center) that actively criticizes the government's economic policies. Thus, students are expected to identify the purpose of the video, i.e., to inform, manipulate, etc. Eventually, students are expected to provide the argument that the author and the video to some extent can be considered critical by nature and somewhat subjective. Moreover, it is expected that the students would be aware that the video is a digest and a commentary rather than a piece of reliable information. Likewise, students are expected to mention that the journalist had pointed out that the videos on his official YouTube channel present his personal point of view; and the fact that the journalist is indeed competent to argue about the economy since he had graduated from the faculty of economy and had experience in particular positions abroad.

For the second assessment, the researcher addressed the students to evaluate a website. Somewhat sectarian, a particular website provides news and information on several subjects. Students are requested to evaluate the website's reliability regarding the articles found on the site on children's health. Students were expected to identify "Who is behind the information?", in this case behind the website, and thus find whether the website is affiliated with any organization, movement, or entity. Students were expected to find out concrete evidence that the site is directly affiliated with one of the sects in Turkey and thus argue that the information provided on the site might be biased and thus unreliable. Nevertheless, those who neglect to practice the lateral reading strategy might

be considering (and had considered) assessing the information on the site regarding the children's health, thus ignoring the website (source) and affiliation, that is, adapting the so-called vertical reading strategy instead of the lateral reading. Moreover, others might consider that the information related to children's health on the site, apparently had been provided by pediatricians and thus consider related content as rather reliable (vertical reading). As a result, students might provide different arguments regarding particular content or the website itself, that is, online content, particular source, authors, and a medium. Nevertheless, since the researcher requests to evaluate the website itself (the source) rather than presented content (information on children's health), expecting that the students would focus on this "unique" website, practicing introduced fact-checking strategies, i.e., a "click restraint" and a "lateral reading" strategy, students' responses have had to be evaluated based on pre-established criteria, i.e., the rubrics that clearly indicates that the learners have to find, locate the website affiliation.

For the third task that gauges students' abilities to assess claims on social media, the researcher requested students to analyze a tweet, as seen in Figure 4.1; a tweet is posted by Ufuk Akcigit. The author of the tweet is an academician, and the tweet itself contains unbiased information. Tweet provides data and findings (inference) based on official statistics. Moreover, a particular tweet presents an external link to an academic's website that provides more comprehensive information regarding the method of analysis and findings.

As a task, students were required to answer two questions. Questions are meant to help researchers to identify whether students are capable to evaluate the strengths and weaknesses of the social media content, in this case, a tweet. Moreover, the assessment was meant to promote those competencies that would help students to evaluate such kinds of tweets in the future. The task address two competencies: 1. "Who Is Behind the Information?" and 2. "What Is the Evidence?". Successful students are expected to identify that the author of the tweet is a renowned scientist, and academician and that particular tweet that contains some figures are based on reliable information. Skillful students have to provide effective arguments, demonstrate sound reasoning, and present reliable external links to sources as evidence.
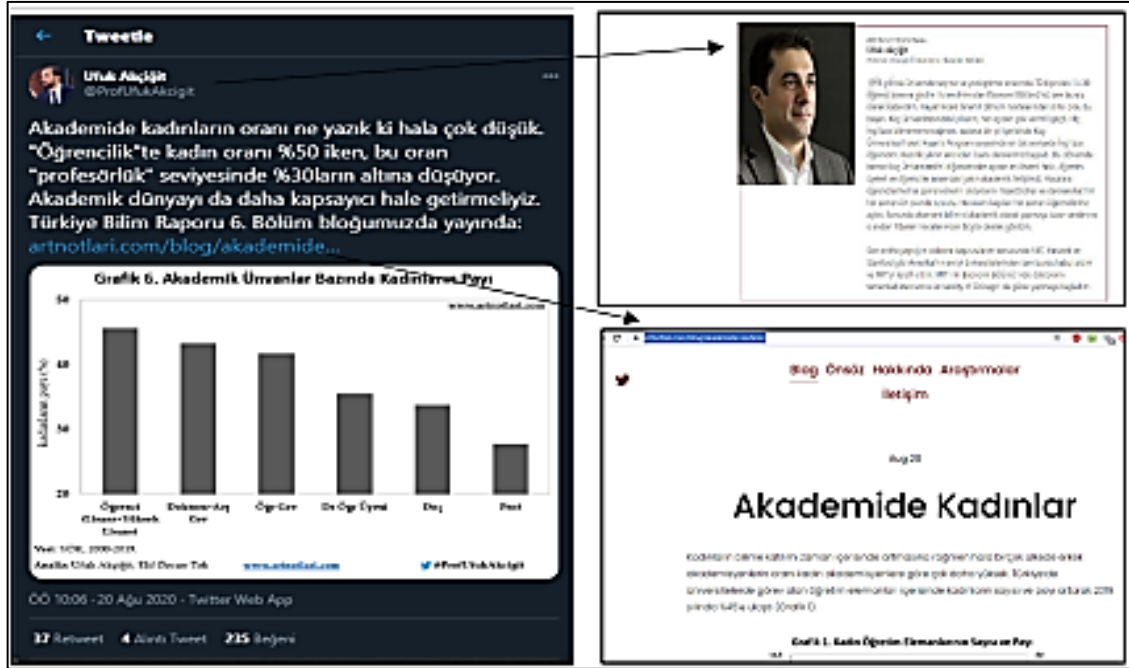
Figure 3.2 Task *Assessing "Who Is Behind the Information?" and "What Is the Evidence?"*

The fourth assessment- "Researching a claim", aimed to assess students' next COR competency, namely, "What Do Other Sources Say?". As seen in Figure 4.2 below, a claim is about "Mel Gibson" "conversion to Islam"; a particular task assesses students' abilities to research a claim, or in other words, to "Google it" and decide whether the claim is true or false. Digital literacy competency assessed in this task can be defined as an ability to analyze and evaluate different sources online and provide reliable information, that is links and relevant evidence regarding the claim. Students were expected to demonstrate critical reasoning and support related online reasoning with facts. Accordingly, students were expected to find reliable sources of information, evidence regarding a claim. To find a "provoking" claim that would engage students' interest, (a topic of interest, e.g., a conspiracy theory), the researcher had analyzed the fact-checking sites such as Teyit.org and Malumatfurus.org and stumbled upon a certain claim, a kind of popular "clickbait" in Turkey, piece of information that spread not as a claim but as an article (magazine article, column) in several websites. Though the claim is baseless, newspapers had neither deleted the content nor provided official apologies for "fake news".

Figure 3.3 "*Researching a claim" Assessment.***

The researcher had provided a particular claim for investigation on purpose so that the students might have an opportunity to visit fact-checking sites and find out how professional fact-checkers analyze and refute a claim, as well as to demonstrate to students how pro-fact-checkers provide evidence for their arguments. Moreover, the researcher aimed to test whether students practice the "click restraint" strategy; and are aware of the fact that the results appearing at the top of the search engine result page, cannot be considered reliable. Thus, the researcher expected that students would run across the news sources and eventually realize the fact that the false claim; the articles on the subject matter are baseless and had been refuted by professional fact-checkers. Thus, students are expected to browse, scan the result page, and find out reliable sources. Moreover, the researcher expected that students would have a curiosity and browse through the fact-checking sites, Malumatfurus.org and Teyit.org, if and when they come across them.

For the fifth assessment, the researcher decided to choose a somewhat controversial and trending topic for that time. As seen in Figure 4.3 below, for the Article Evaluation assignment, the researcher had presented students with an article that offers an opinion, a commentary regarding the "Istanbul Convention". The convention signed in Istanbul in 2011, is related to the subject of preventing violence against women.
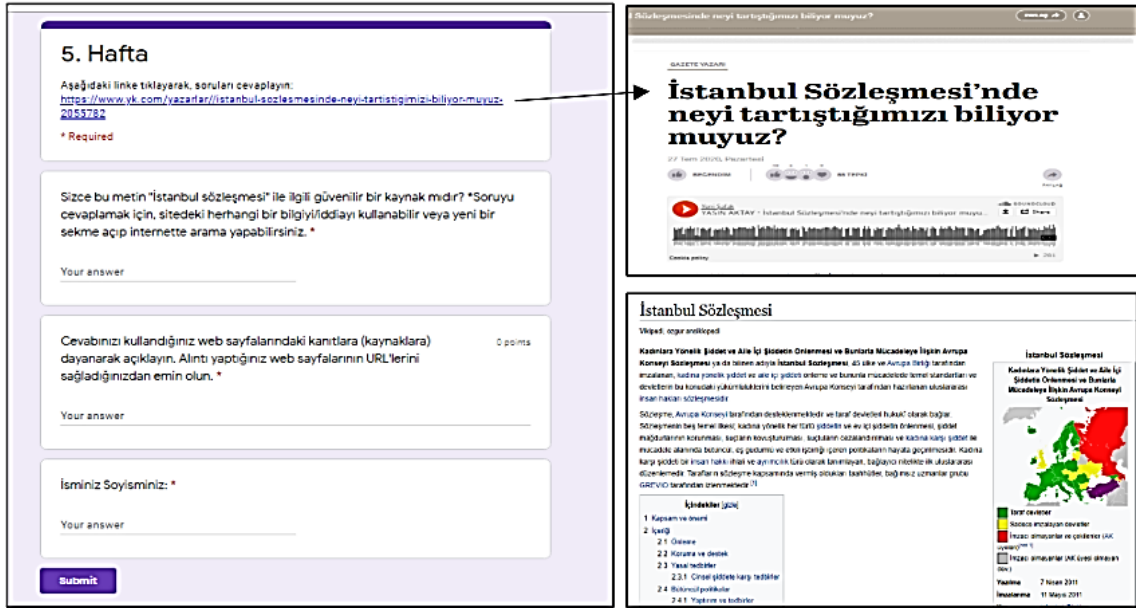
Figure 3.4 *"Article Evaluation" assignment screenshot. (B) A link leading to a source (C) Wikipedia page on a subject matter.*

The assessment that aims to gauge students' abilities of online reasoning, is related to one of the COR competencies, namely "What Do Other Sources Say?". That is, the researcher expected that students, analyzing the column, i.e., articles that provide an opinion and a commentary, will realize that the article is subjective and rather biased. Moreover, the researcher expected that students would provide objective information, factual information, and evidence regarding the subject matter, for instance, a link to a Wikipedia page. Moreover, successful students might have provided additional information on the author of the article and the website (source) as well. Thus, students were expected to realize that online text is a newspaper column, and therefore, the article provides a writer's opinion on the subject matter. Hence, a particular source involves subjective information that is meant to persuade, incline readers towards the author's belief.

3.9 Procedure

Online instruction designed by the researcher and called "Digital Media Literacy" had been administered for 7 consecutive weeks. In this context, the lessons were add-ons to the regular curriculum and were not tailored to course content. Since intervention had been delivered online, learning had occurred by means of the Internet and digital devices.

Hence, a particular intervention can be broadly defined as e-learning (Clark & Mayer, 2016). By following the asynchronous e-learning model, and particularly, the instructor-paced online course model (Kocdar et al., 2018), a form of distance education where the instructor sets a time to complete each assignment, the researcher introduced instructional materials as presentations followed by a practice. Asynchronous mode of online learning has been adopted due to pandemic induced problems such as students' lack of motivation, absenteeism, technology issues ("digital divide"), etc. Thus, though the instructor attempted to deliver learning synchronously, due to student absenteeism during the pandemic induced distance education (crisis context), conducting synchronous learning turned out to be worthless. To compensate for lost time, swiftly switching to an asynchronous e-learning model was considered a reasonable measure at that time.

The first, presentation part of online instruction intended to introduce "fundamentals" on media and information literacy (MIL). Based on Media and Information Literacy curriculum framework, the researcher designed learning materials considering Turkey's digital news and media landscape. Basic subjects underlying ideas and principles related to media and information literacy, relevant subjects related to the country's present-day digital media landscape had been delivered via Canvas as (a) downloadable presentations (pdf documents), (b) informative texts, (c) links to educational media on YouTube (e.g., Ted-Ed) and (d) summary of "books to read" in Turkish related to the concept of "post-Truth". Furthermore, considering the main objective of the study, which is to raise awareness on fake news, the researcher embedded relevant presentations within the adapted MIL curriculum. Hence, presentations related to fake news phenomenon, such as: "Fake news typology (Wardle's typology) with a relevant example from Turkey's mass media ", "Definitions on the concept of Filter Bubbles and Echo Chambers", "Negative effects of social media algorithms, cookies & other tracking technologies", " Cognitive biases; Unconscious Bias and its unintended consequences "and etc.; had been introduced in forms of downloadable presentations (pdf file), informative texts and YouTube links.

To engage students in learning, the researcher presented a basic Yes/No test. The test aimed to raise students' awareness of fake news in the context of Turkey's social media landscape. The test comprised four posts once shared on social media. Students were required to look at the posts and decide whether these "news" shared on social media platforms such as Twitter and Facebook are true or false.

Two of four posts had captioned images and were relevant to "fake news" actively spreading at that time. Particularly, the posts were related to a conflict between Azerbaijan and Armenia called as 2020 Nagorno-Karabakh war. Students, deciding on the veracity of the posts, were required to click on one of the answers, yes or no, and following the reply click on a link that led to fact-checking sites: Teyit.org and Malumatfurus.org. At the sites, students were supposed to find a correct answer with related analysis considering the posts. In this context, almost all students were right, not believing these social media posts. The screenshots of the tests are seen in figure 4.4 below
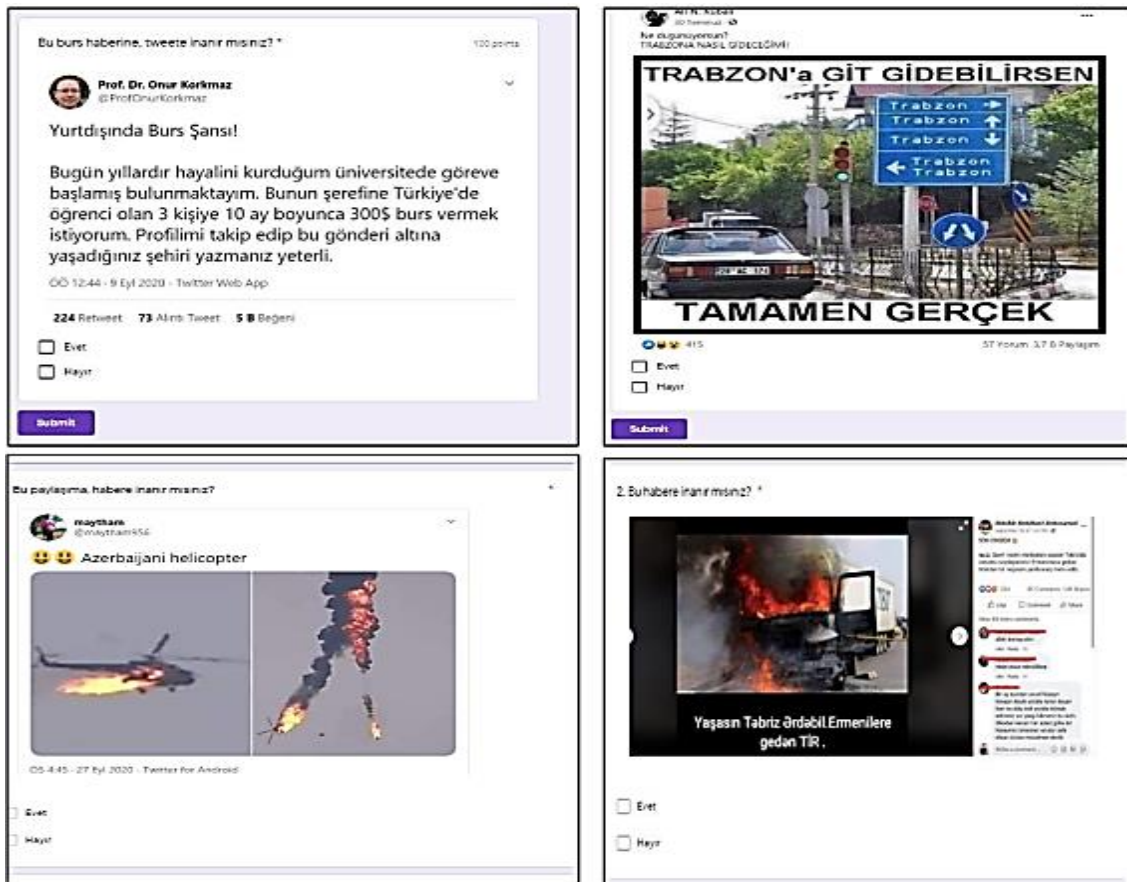

Figure 3.5 *YES/NO test.*

The reason behind administering the test was, to indirectly demonstrate to students that fake news is spread at critical times, in this context, at the time of conflict. The conflict over the disputed region, in this context, was the best example at that time, since the conflict had fueled the spread of misleading social media content, aka fake news. Taking into account the posts supposedly related to the conflict, the manipulated images

as seen in the figure above, in fact, are either re-edited or old video footages that have been deliberately labeled as portraying the events related to that war. That is, the images with the captions in the figure, are rather false by context, and thus, both manipulated images, here can be referred to as 'misleading content' based on Wardle's (2017) typology. By administering the test, the researcher expected that students would proceed and click on the subsequent links, the links that demonstrate how professional fact-checkers at Teyit.org and Malumatfurus.org verify and refute that kind of fake news.

Table 3.6 below illustrates the whole procedure of the study.

TABLE 3.6 *Procedure of the study*

DATE	MIL MODULE, RELATED UNITS
Week	Introduction to the Course **Pretests of Self-efficacy scales** 1. New media literacy self-efficacy scale (NMLS) 2. Information Literacy self-efficacy Scale (ILSES) (Data collected with Google Forms)

Week 1	**MIL CORE MODULE 1:** Citizenship, Freedom of Expression and Information, Access to Information, Democratic Discourse and Life-long Learning
	Related Unit: 1. Understanding Media and Information Literacy:
	An Orientation
	
	A text on Canvas:
	  Introducing the COR skills. (COR's 3 Underlying questions)
	  What is the "Lateral Reading"? (Fact-checking strategy)
	
	MIL Presentation:
	  What is Media and Information Literacy? (Pdf file)
	  Importance of the media and other information providers
	  Defining "Fake News" and the Wardle's Typology (*7 Types of Mis- and Disinformation*) (pdf file)
	
	COR Assignment Week 1 (Link to a Google Form)

TABLE 3.6 (Continued). *Procedure of the study*

Week 2	**MIL MODULE 8**: Information Literacy and Library Skills
	Related Units: 1. Concept and Applications of Information Literacy
	3. Digital Information Literacy (Key topic: The nature of online information)
	A text on Canvas:
	Introducing the "Post-truth" (Canvas text box); Recommendation to read the book "Yalanın Siyaseti" (The Politics of Lying) by Yalın Alpay
	Activity in Canvas
	Yes/No quiz with answers (embedded Google Form). *Test Yourself.: Detect the fake/false content (Twitter and Facebook posts)*
	MIL Presentation:
	1. Evaluating Evidence (Civic Online Reasoning Strategies and Skills)
	2. Fake News and Cognitive Bias. Common Logical Fallacies (pdf file)
	3. Fact-Checking Sites (pdf file)
	COR Assignment Week 2 (Link to a Google Form)
Week 3	**MIL Module 2** Understanding the News, Media and Information Ethics
	Related Unit: 1. Journalism and Society
	(Key topics: Concepts of 'free speech' and 'free press', Purpose of journalism in society and its role in the architecture of democracy, Role, and responsibilities of journalists)
	A text on Canvas:
	Review of the "Click Restraint" Strategy (COR fact-checking strategy)
	Introducing the basic concepts of fact-checking: *social media bots*, *virality. filter bubbles, echo chambers, propaganda, manipulation, objectivity, algorithm* (Based on material from Teyit.org by Kansu Ekin Tanca)
	• How to use the Google Images (search with an image), a link to Instruction.
	Presentation:
	Journalism Ethics, Standards, and the News; Media Censorship (pdf file).
	COR Assignment Week 3 (Link to a Google Form)

TABLE 3.6 (Continued). *Procedure of the study*

Week 4	**MIL Module 3** Representation in Media and Information.
	Related Units: 1. News Reporting and the Power of Images 2. Industry Codes in Diversity and Representation
	A text on Canvas: Brief Review of "Cognitive Bias and how to avoid the Confirmation Bias" "Why Factual Reality is important?". Recommendation to read the book ""*Hakikat Sonrası Çağ: Günümüz Dünyasıda Yalancılık ve Aldatma* " (The Post-Truth Era) by Ralph Keyes, and related book snippet.
	MIL Presentation: Media Representation and the Importance of Diversity in Media (pdf file)
	COR Assignment Week 4 (Link to a Google Form)
Week 5	**MIL Module 4:** Languages in Media and Information
	Related Units 1. Reading Media and Information Texts; 2. The Media and the Message
	A text on Canvas: What is the "Critical Thinking?" **Presentation**: Media Literacy (pdf file)
	COR Assignment Week 5 (Link to a Google Form)

TABLE 3.6 (Continued). *Procedure of the study*

Week 6	**MIL Module 6:** New and Traditional Media
	Related Units 1. From Traditional Media to New Media Technologies
	2. Uses of New Media Technologies in Society –Mass and Digital Communications
	"Motivated reasoning and the importance of digital literacy", based on learning material from Teyit.org by Kansu Ekin Tanca. (text)
	Verification Techniques. How to verify images. How to verify the video. External links to Malumatfurus.org.
	Presentations:
	New and Traditional Media (pdf file)
	Google Advanced Search (pdf file)
	COR Assignment Posttest 1 (Link to a Google Form)
Week 7	**MIL Module 11** (Non-Core Module): Media, Technology and the Global Village
	Related Units: 1. Media Ownership in Today's Global Village
	3. Commoditization of Information
	4. The Rise of Alternative Media
	A text on Canvas:
	Review of the basic concepts learned within the course (text)
	Misinformation, Disinformation and Conspiracy Theories text and YouTube video embedded in the Canvas (by TED-Ed)
	Introducing the concept of "Global Village", external link to medium.com
	Techniques and methods used to verify the information by Malumatfurus.org (link to a site)
	Presentations:
	How to cite sources (pdf file)
	Digital transformation (pdf file)
	COR Assignment Posttest 2 (Link to a Google Form)
	Posttests of Self-efficacy scales

As seen from the table above, the briefing part of the intervention offered students fundamental learning material that aimed to enhance basic competencies on MIL whereas the practice part (assessments) aimed to promote students' COR (digital literacy) skills. The briefing comprised of authentic downloadable presentations alongside supplementary information presented on Canvas as text and links to YouTube videos had been thoroughly opted considering the objective of the study. For instance, the researcher provided links to educational videos on YouTube shared in TED-Ed channel such as: "How false news can spread?", "How to choose your news? and "Why do people fall for misinformation?" on purpose, to spark the curiosity of students towards the subject matter. The presentations, pdf files uploaded in Canvas, were created by the researcher considering the media and information landscape of the state, available illustrations, and basic information required to be acquired by students. Accordingly, the researcher strived to provide essential information in multimedia formats, not only in text.

The second component of intervention aimed to assess and enhance students' digital literacy (COR) skills. That is, online learning is enabled through formative assessments, or in other words, assignments provided as practice activities aimed to assess and eventually promote students' digital literacy skills. Here, it is important to note that Reiser and Dempsey (2012, p.282), emphasize that "the richest learning experience" should "go beyond the simple acquisition of knowledge". Accordingly, while the first part of the instruction is based on the acquisition of knowledge (passive learning), the second part of the instruction is based on the construction of knowledge, that is, involving active learning. Considering both, interrelated phases of online instruction (static and dynamic), designed and implemented by the researcher, a curriculum coined as "Digital Media Literacy", aimed to enhance interrelated competencies that encompass a combined set of skills of media and information literacy (MIL) and Civic Online Reasoning (COR).

The second element of online instruction is based on inquiry, designed to enable learners to construct individual knowledge online by engaging in the "active learning" process, a practice reinforced by the instructor's immediate feedback (Mayer, 2004). Considering that particular learning promotes the "construction of individual meaning" by helping "to reveal misunderstanding, oversimplification, and personal theories"; the process is based on the "guided discovery" method (Mayer, 2004) since (technology-enhanced) learning, occurring online, is guided and supported through immediate feedback provided by the instructor via the Google Forms. Here, Google Forms as an

online platform enabled the researcher to collect students' responses and provide immediate feedback. Moreover, a particular platform enabled the researcher to provide a quiz, designed to enhance students' understanding of the fake news phenomenon.

The feedback provided as a pdf file presentation aimed to demonstrate students detailed instruction on how to practice fact-checking strategies such as "lateral reading" and "click restrains" online, as well as consider diverse search results due to differences in search engines (and therefore underlying search algorithms); or in other words, presentations regularly emphasized that the students should always take into account that the results might be customized, i.e., personalized based on the user's activity history. Accordingly, the feedback demonstrated to the students not only the fact-checking strategies but also particular features of the Internet search, relevant procedures (steps) students were required to follow, and the details they should have noticed (See Appendices). That is, the researcher using the feedback has emphasized that search results might vary depending on several factors such as words of query, user location, and settings (importance of considering the browser's cache, cookies, and other tracking technologies).

The immediate feedback provided online for "guided discovery", on the one hand, enabled students to notice misunderstandings and misinterpretations related to MIL subjects and COR strategy; on the other hand, revealed a true extent of an individual grasp of interrelated digital, media, and information literacy theories, concepts, strategies and skills required to evaluate digital content. In this context, online learning, and particularly, training is enhanced by immediate feedback, also known as "structured exploration" (Mayer, 2004).

According to Reiser and Dempsey's (2012, p.377) argument based on decades of empirical researches, "a guided instruction is the most effective and efficient method for supporting the learning in any subject matter". Hence, instructional designers should promote guided instruction as well as present an opportunity for students to "practice and receive corrective feedback", considering "authentic problems" that truly "represent the environment where students will transfer what they have learned" (Reiser & Dempsey, 2012, p. 377).

The adapted COR assessments enabling inquiry-based learning were meant to promote learning and the mastery of relevant skills. That is, given that authenticity, is a key characteristic of the authentic assessments that promote learning (Villarroel et al.,

2018), the assessments utilized within the study for formative purposes, were meant to positively affect students learning, their motivation, self-regulation, and autonomy. Moreover, given that authentic assessments, used as formative assessments within the study, to a greater extent, replicate the real challenge that students face daily navigating online, not to mention that the assessments cover the performance standards (fact-checking skills' dimensions) that students were expected to grasp, authentic assessments, in fact, were at the center of a particular online intervention. Thus, taking into account the assessments and the feedback provided within the assessments, the "digital natives" using the Internet as a tool had an opportunity to demonstrate the full extent of the mastery of relevant digital and media literacy skills, notice their strengths and weaknesses; and consequently, reinforce and improve their individual learning and understanding of the MIL concepts and the COR (i.e., fact-checking) strategies.

Students' responses collected online by means of Google form, provided the researcher a data that represents individual understandings and proficiency levels of students on media and information literacy (MIL) and civic online reasoning (COR). Thus, the researcher had an opportunity to gauge students' performance level regarding the COR skills based on adapted rubrics. To ensure the credibility of the assessment, the researcher involved one more grader, a graduate student from the faculty of communication sciences. In other words, to secure the reliability of the categorization, the Kappa inter-rater reliability test was performed. In this context, based on adapted COR rubrics, every student was assigned to one of three levels according to performance, namely: beginner, emerging, and mastery.

To find out whether the feedback is effective for learning to occur, the researcher administered two more assessments towards the end of the intervention. Final assignments were administered to assess the effectiveness of feedback and to determine whether students are able to assess digital content independently. Thus, the final two assessments were meant as parallel assessments. In this context, Boud (2000, p.158) based on Sadler's (1989) argument, emphasize that educators, adapting the formative assessments for learning, forget that "the only way to tell if learning results from feedback is, (...) for example, redoing the same assignment". That is, to realize whether the students learned from feedback, educators should retest the learners using the same assignments since without a retest, neither students themselves nor the instructor "will know that the feedback has been effective" (Boud, 2000, p.158).

The table below illustrates one of the rubrics that clearly defines the criteria that raters should follow for assessing the students' responses. The COR rubric has been adapted considering the online task that assesses students' ability to evaluate online video, in this case, a video shared on YouTube.

Table 3.7 *Criteria-based evaluation. Adapted COR rubrics (Wineburg et al., 2018).*

Performance Level	Criteria. Basic Description.
Mastery	A student considers both the speaker's *credentials* and the video's *purpose*. The student provides a coherent explanation of how these factors influence the credibility of the video.
Emerging	A student does not fully explain how both the speaker's credentials and the purpose of the video influence its credibility.
Beginning	A student does not consider the speaker's credentials or the purpose of the video, offers no explanation, or provides an irrelevant explanation.

The COR assessments adapted "for learning", as formative assessments, has been presented online by means of Google forms, and designed to promote individual learning and help prospective teachers to identify their strength and weaknesses regarding the MIL subjects, not to mention, the COR competencies.

Designed to further critical thinking skills, formative assessments provided the researcher essential information regarding students' knowledge and skills, i.e., considering the MIL and COR competencies. Thus, although adapted assessments had been used "for learning" rather than "of learning", the researcher analyzing students' performance throughout and after the intervention, had an opportunity to assess students' media literacy levels, not to mention the digital literacy skills, i.e., fact-checking skills a.k.a. the COR competencies, based on adapted rubrics.

The researcher analyzing students' responses for the assignments, was able to identify "problematic areas" regarding the students' understandings of MIL and COR subjects. As a result, to compensate for "missed understandings" as well as misunderstandings, the researcher reintroduced several critical subjects related to MIL and COR; moreover, towards the end of the semester, he has decided to include two additional (parallel) assessments, to foster positive outcomes considering intervention.

The second part of intervention, training, also known as a practice, aimed to enhance the specific set of skills, or the COR skills, in particular. In this context, for the training, the researcher adapted online pedagogy known as "guided discovery" (Mayer, 2004). The outcomes of that training have been provided in the findings part.

According to Clark & Mayer (2016), the second component of online instruction can be defined as "perform program" since students were ought to demonstrate concrete performance. That is, the second part of online learning, enabled students to demonstrate individual performance that directly indicated their relevant competencies with respect to digital literacy, media literacy, and information literacy. Moreover, assessments utilized for formative purposes had demonstrated students' actual knowledge and skills rather than perceived competencies. Here, online learning was based on authentic tasks, expected to induce entirely different experiences, that very likely would lead to a psychological conflict (cognitive dissonance), since students would perceive a difference between their beliefs and actual abilities.

To answer the question "why the researcher provide instruction in two parts?", one should focus on the central phenomenon addressed in the study, i.e., fake news. That is, to discern fake news from real, individuals need to know how to evaluate digital content (online sources) considering that they already know how real news should look like. Accordingly, based on the fact that more than half of students were not subjected to media literacy before the intervention, the researcher had to provide basic media literacy education that includes relevant subjects, prior to moving to a second, practice part of instruction. The practice part of the instruction is a perform program, according to Clark and Mayer (2016), since online lesson focuses on assessing and enhancing specific skills; COR skills, which are the skills of performance nature. That is, while the first part of online instruction is based on learning objectives that are tackled by means of presentations (passive learning), that is, the information presented "to inform" students, the second part of the lesson is based on the learning objectives that aims to engage students (active learning), that is, learning is addressed as and for "to perform". The second stage of online training in this context enabled the researcher to practice a "guided discovery" approach.

In other words, since prior (fundamental) knowledge of the participants directly affects awareness on the subject of fake news, a basic media literacy education, including additional subjects related to information literacy, social media, and fake news concept;

had been considered as a prerequisite before initiating authentic practice, i.e., online instruction that aims to help learners to discern the fake news (evaluate online content). Thus, to raise awareness on fake news, individuals, first and foremost, are required to possess (acquire) fundamental knowledge regarding the importance of news media, the significance of fair and accurate media for democracy, the main principles underlying ethic journalism, human rights, and other relevant subject matters of the media literacy education; and only then transit towards mastery of superordinate skills (Reiser & Dempsey, 2012). Hence, a first- the "briefing" part of "Digital Media Literacy" education, has been considered as "called for" step that aimed to enhance understanding on the subject matter, for more than a half of the students, prior to intervention, reported that they had not been subjected to a course of media or information literacy at all. Providing the "perform program" lesson directly, disregarding the briefing (presentation) part, would be inadequate and insufficient in terms of intervention since, without basic media literacy education, students would not understand the essence and the idea behind the role of media and news in democracy; and thus, the motives behind spreading of fake news. Moreover, at the end of the day, students would not have grasped the significance of assessing the reliability of online information.

Another reason behind the decision of providing MIL is based on the fact that media literacy education in Turkey is not a compulsory subject, and as a result, more than half of the students recruited for the study reported that they had not been subjected to media literacy education whatsoever.

Since media literacy is a must rather than an option, delivering a basic media literacy education online as briefing (presentations) considering the Media and Information Literacy (MIL) Curriculum Framework for teachers had been essential for the main purpose of the research. Instruction that has been delivered in asynchronous mode, included presentations related to MIL that have addressed issues such as "What is news? Why news is important? The difference between opinion (commentary) and facts? Why does objectivity matter? Why media is important? etc. Thus, subjects were introduced to the basic ideas behind media literacy education and the reasons why media literacy education is considered as a fundamental element or rather a cornerstone of democracy. Thereby, subjects such as freedom of speech, freedom of the press, fundamental human rights, core principles of ethical journalism, mass media, and news were presented.

Unawareness of citizens on the subject matter, i.e., basic principles of media literacy, leads individuals to susceptibility to misinterpret and misjudge all kinds of information, in this case, not only fake news but also (dis)information disseminated through the mass media. Thus, the first step to tackle the problem of fake news is to provide basic knowledge on media literacy. Nevertheless, merely providing theoretical foundations of media literacy is not sufficient and thus does not guarantee that the subjects would actually demonstrate the critical thinking skills necessary to discern fake news from the real ones. Considering the premise, since "practice makes perfect", the subjected were required practice to evaluate media and information. In other words, engaging students to practice media literacy skills online including digital (technical) skills, critical thinking skills demands a higher-level of an educational approach that would enable practice and thus eventually would empower students to navigate online more confidently and implement know-how strategies that will help them to discern the fake news on their own, the particular approach is known as "guided-inquiry", issue-inquiry approach or inquiry-based learning. Hence, the practice part of "Digital Media Literacy" instruction, considered assignments.

Considering the architecture of the e-learning, i.e., the structure of the intervention, the course of instruction had been based on two distinct architectures. That is since the intervention had two basic parts, the course of instruction had two interrelated aims that had been based on two learning assumptions.

The first part of the online course considered "receptive architectures based on an information acquisition view" whereas the second part of the course is based on "guided discovery architectures based on a knowledge construction view" (Clark & Mayer, 2016, p.21).

Different architectures of e-learning are based on different views and thus used for different purposes. According to Clark and Mayer (2016), the receptive architecture of e-learning takes into account information acquisition theory and thus accepts a low level of engagement. Used for informing, receptive type of e-learning, i.e., receptive lesson architecture requires almost no interactivity for the subjects. On the other hand, the "guided discovery" type of e-learning architecture, is based on knowledge construction theory and thus requires higher levels of engagement. The particular e-learning architecture is used to foster performance. Thus, in this type of e-learning, students have to actively engage in knowledge construction both behaviorally and psychologically.

The "guided-discovery" architecture is more challenging than the receptive architectures of e-learning since "it requires learners to solve a problem and learn from its solution". Here, a solution is feedback provided by the researcher in form of a pdf file presentation, whereat feedback is and serves as "information provided to alter the gap between the actual level and the reference level" (Ramaprasad, 1983, p.5). The reference level in this context is students' beliefs regarding their competencies of media literacy and information literacy as well as their actual (COR or digital literacy) skills required to effectively evaluate the reliability of social media content. Beliefs, in this regard, have been measured by means of two different self-efficacy scales, NMLS and ILSES, before and after the intervention.

The guided discovery architecture of e-learning is effective for instructors who aim to cultivate "far-transfer skills" for experienced learners since guided discovery "impose more mental load than the directive architectures of e-learning" (Clark & Mayer, 2016, p.22). Hence, the second, a "guided practice" or "guided discovery" part of the intervention, a "Digital Media Literacy" instruction, aimed to assess and enhance students' media and information literacy knowledge and skills, skills of inquiry, and particularly critical thinking skills, the COR skills (i.e., abilities to evaluate the credibility of online content), alongside the digital literacy skills. In this context, while the first part of the e-course offers education (focus on the acquisition of knowledge), the second part enables training (focus on performing a set of specific skills). Accordingly, "Digital Media Literacy" instruction, is an inclusive online course that entails relevant theories as well as practices of digital, media, and information literacy.

4. FINDINGS

The current chapter presents the findings regarding the intervention that has been carried out online by the researcher to raise awareness of prospective teachers on the subject of fake news. An embedded intervention (experimental) mixed methods research design was carried out to answer the questions addressed in the current study. The intervention, a course of instruction named "Digital Media Literacy", has been designed and administered online by the researcher considering the needs of the students. Accordingly, the particular intervention consisted of two integrated parts, namely education and training, that is, basic media literacy education and online training that aimed to enhance students' skills of evaluating online sources. Thus, the researcher presenting the following findings integrates both quantitative data with qualitative data in order to provide in detail the outcomes of the online intervention, a learning process, that was based on two distinct e-learning architectures, namely receptive and guided discovery (Clark & Mayer, 2016); and correspondingly, two relevant pedagogical approaches, namely, a passive instruction (presentations, knowledge acquisition) and active instruction, that is inquiry-based learning, student-centered learning promoted by means of formative assessments (guided practice, knowledge construction).

4.1 Pre-survey

The findings of the study are presented according to the questions addressed in the study; however, information obtained from a pre-survey that aimed to gather information about the target audience, covering a total of 3 general questions are presented in the first place. The survey was administered via Google Forms, designed to find out students' former understanding of the fake news phenomenon, as well as to find out their media literacy knowledge. Accordingly, based on that initial data, the researcher revised the intervention and had included several basic media and information literacy subjects.

The initial survey comprised 3 general questions, particularly, two closed-ended and one open-ended question. By addressing two dichotomous, Yes or No questions, the researcher, attempted to find answers on a) whether students' have encountered fake news in the past; and if yes where exactly (answer were optional); b) whether participants have ever been subjected to any media literacy in the past. The final, open-ended question, aimed to elicit individuals' social media preferences, and accordingly, the researcher

requested from students to list their most visited social media platforms. The results of the first survey are presented in the figure below.
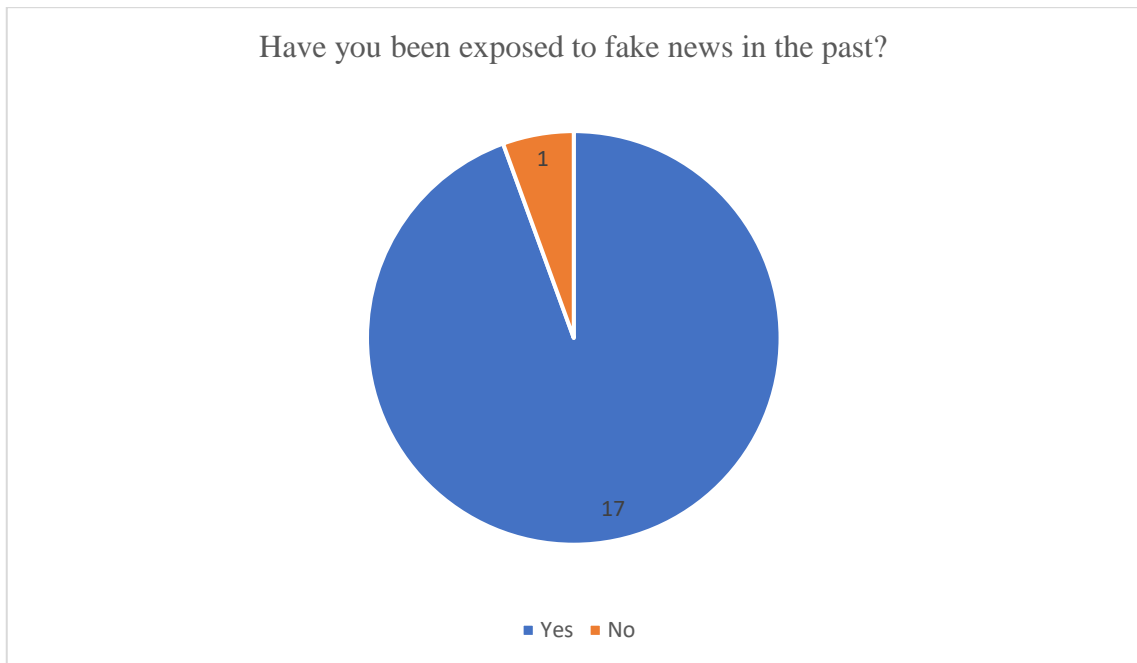

Figure 4.1 *Participants' Past Experience. Exposure to Fake News*

As seen in the figure above almost all participants have encountered fake news prior to intervention. Only one of the participants stated that he had not encountered fake news in the past, expressing his thoughts as:

> " Frankly, I don't think that I have been exposed to before; for I don't watch news much and even if I do, I don't believe news without verifying them."
>
> (Student T)

Almost all participants who confirmed that they had experienced fake news in the past, specified particular social media and legacy media channels that have been listed in the chart below:
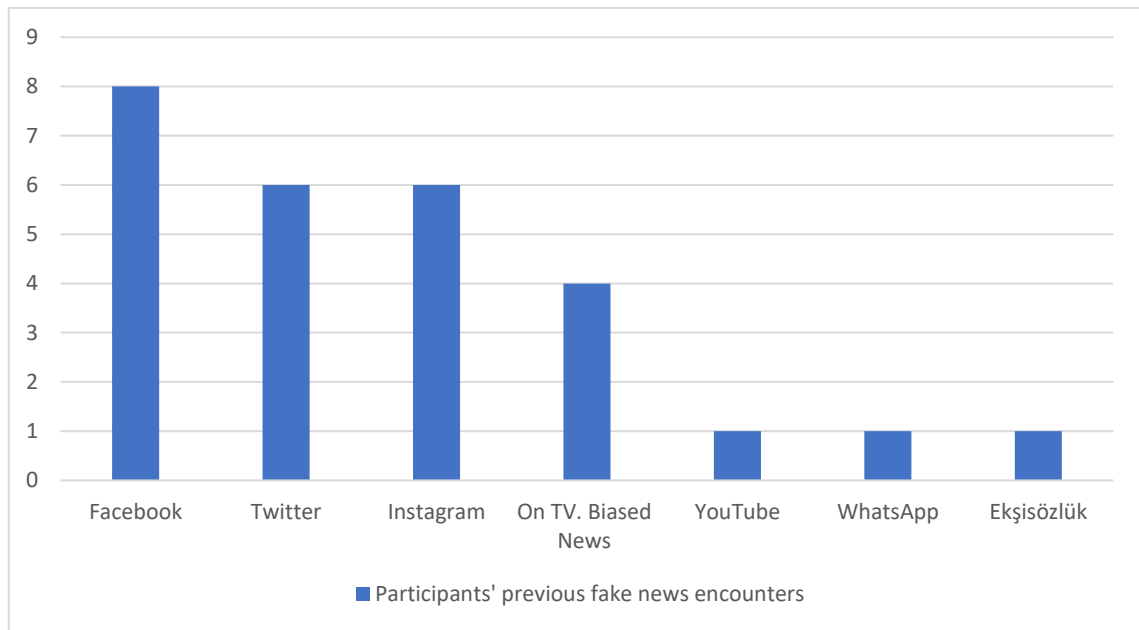
Figure 4.2 *Fake News sources according to participants' past experience*

The researcher addressed the same question within the interview that had been conducted after the intervention with 3 participants. The question has been addressed in order to elicit an individual experience of fake news (prior exposure to the phenomenon). All three interviewees provided the details of relevant experience; and particularly, (a) where they encountered fake news and (b) how they discerned that the news was fake. Below are the excerpts of these interviews:

> "On the news page called Ahaber, back in the day I stumbled upon news and when I looked at the figures and evidence, presented in the news, I realized that the content was quite biased and fake"
>
> (Interviewee A)
>
> "I've encountered fake news in the past. Quite a lot, actually. However, I did not take it seriously since I believe that I am able to discern fake news, more or less."
>
> (Interviewee B)
>
> "Well, when you take a look (at fake news), it is obvious that the presented information is baseless, however, when I am not sure, I visit the sites like Teyit.org; read relevant comments that provide evidence regarding such kind of news on Ekşi Sözlük, in that way, I do understand whether the information is fake".
>
> (Interviewee C)

To get a wider picture of how students understand the phenomenon, the researcher requested interviewees to provide a personal opinion regarding the medium where fake news is more common.

> "I think fake news is more prevalent in traditional media since the audience doesn't question (the content), and thus believes everything they watch on TV, people think that whatever they see, is true, so traditional media give the means to, provides a space, and infrastructure (for the fake news)"
>
> <div align="right">(Interviewee A)</div>
>
> "In general, fake news is prevalent on social media platforms such as Twitter and Instagram, and particularly on YouTube; in other words, fake news is most noticeable on social media platforms."
>
> <div align="right">(Interviewee B)</div>
>
> "Generally, or say mostly on Facebook, but I will not take it into account since I don't use Facebook that much; so mainly I come across the fake news on Instagram, in my opinion, the fake news is more widespread on visual media"
>
> <div align="right">(Interviewee C)</div>

Based on the information above, two out of three interviewees had particularly specified social media platforms while one interviewee had stated that fake news is more prevalent on legacy media, and TV in particular.

The findings of the second closed-ended question addressed prior to intervention, presented in the graph below. As seen in the figure, only 8 out of 18 participants have been subjected to media literacy education in the past, whereas 10 out of 18 had not been subjected to media literacy education. In this context, it is worth mentioning that media literacy has been introduced as a selective (optional) course in the primary school curriculum in 2007.
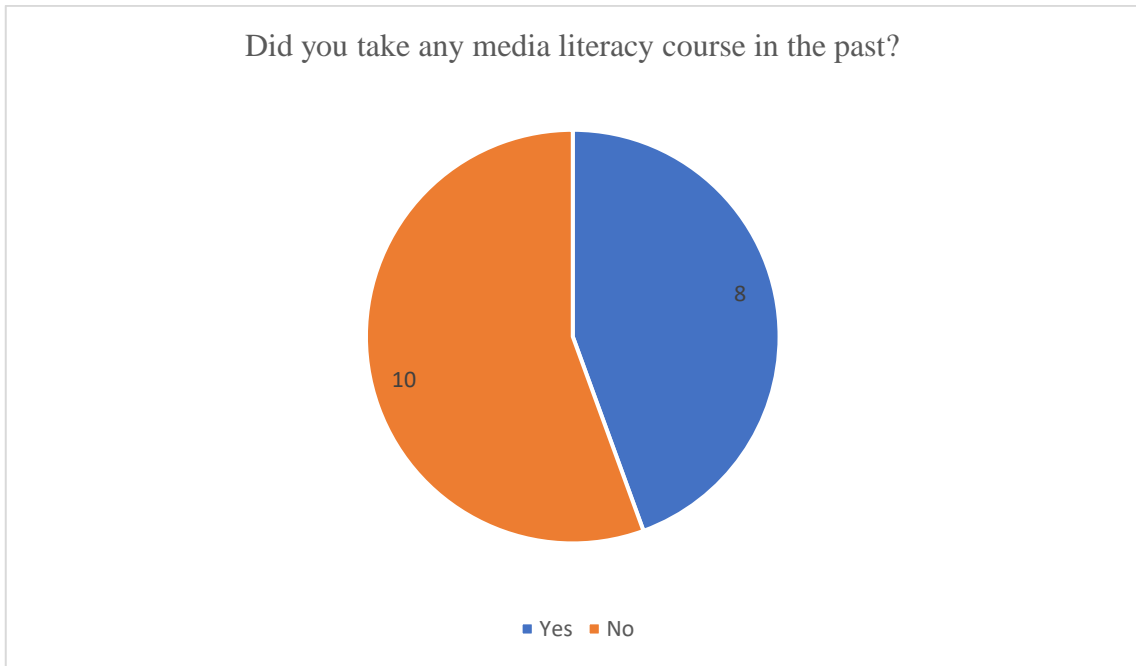
Figure 4.3 *Participants' Prior Media Literacy Education*

Finally, the third open-ended question that demonstrates participants' social media preferences is presented in the figure below:
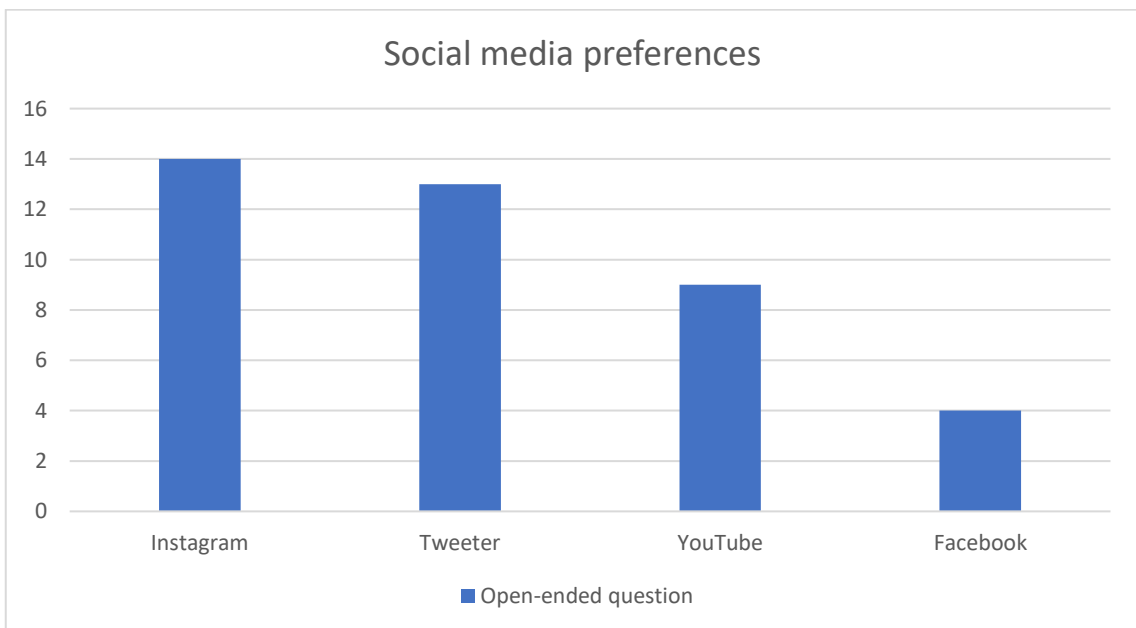

Figure 4.4 *Participants' social media preferences*

As seen in the figure above, Instagram is the most popular social media platform among participants, where it is followed by Twitter, YouTube, and Facebook. In this context, participants' preferences roughly correspond to populations' social media preferences presented within the Global Digital Reports, Turkey review; according to that data, YouTube is the most used social media platform in Turkey, followed by Instagram, WhatsApp, Facebook, and Twitter (Kemp, 2020). The same report also revealed the total time spent online and on social media in particular. Accordingly, people in Turkey spend on average seven hours and 57 minutes online, whereat two hours and 57 minutes of that time are allocated to social media.

4.2 Research Question 1.

The first question of the study is,

> 1) To what extent do the formative assessments utilized within the "Digital Media Literacy" course affect prospective teachers' abilities to evaluate digital content?

To find answers to the question, the researcher assessed students' performance with respect to Civic Online Reasoning (COR) skills; digital literacy skills that broadly can be referred to as the "ability to effectively search for, evaluate, and verify social and political information online" (McGrew et al., 2018, p.166).

Although self-efficacy scales utilized within the study provide the researcher reliable and measurable data; both scales, NMLS and ILSES, assess students' (perceived) knowledge regarding new media literacy and information literacy. Accordingly, to measure students' actual competencies, assess student performance in a real-life context, the researcher required a different approach. For that reason, in a word, to be able to measure individuals' digital literacy, the researcher adopted the COR assessments and rubrics, the COR curriculum materials that specifically has been designed to (a) enhance students' digital literacy skills and (b) help teachers to measure the students' relevant knowledge, i.e., performance. Hence, unlike self-efficacy scales, adapted COR assessments and rubrics, directly gauge students' abilities to evaluate the quality of digital content

All assignments had been administered via Google Forms since a particular web-based service enables to assess and enhance students' skills of evaluation, in a ubiquitous manner. Students' responses for the assignments, had been gauged according to the rubrics that specify criteria for assigning students into 3 levels, beginning, emerging, and mastery. The scoring rubrics, i.e., adapted COR rubrics, not only define criteria for assessing students' responses, but also provide specific examples that clarify the benchmark for student responses.

The table below illustrates the first rubric that clearly defines the criteria that raters should follow for assessing the students' responses for the first week's assignment. That is, the rubric has been elaborated for the online task that assesses students' ability to evaluate online video. In this context, the video has been shared on YouTube, where the researcher presenting the task via Google Forms, addresses the students to decide; "whether or how much they trust the particular video if the video were meant to be used by them as a source of information on the subject of economics".

Table 4.1 *Criteria-based evaluation. Adapted COR rubrics (Wineburg et al.2018).*

Performance Level	Criteria. Basic Description.
Mastery	A student considers both the speaker's, i.e., Murat Muratoğlu credentials and the video's purpose. The student provides a coherent explanation of how these factors influence the credibility of the video.
Emerging	A student does not fully explain how both the Murat Muratoğlu's credentials, and the purpose of the video influence its credibility.
Beginning	A student does not consider the Murat Muratoğlu's credentials or the purpose of the video, offers no explanation, or provides an irrelevant explanation.

As seen from the table above, to be considered at mastery level performance, taking into account the first-week task-evaluating video, students should have been able to locate information about the speaker and his credentials; in this case Murat Muratoğlu, a journalist working for one of the leading, Turkish daily newspapers. Muratoğlu is a journalist holding a degree in economics. Moreover, students were expected to locate specific information regarding the speaker's background and acknowledge that the video represents the author's left-of-center political perspective (alignment), and thus, rather has a critical (analytical and political) purpose.

The researcher has adopted the 'COR' rubrics, taking into account the relevant assessments used within the study. The authentic assessments, in this context, used within the study for formative purposes were designed based on the original COR assessments (McGrew et al., 2018). That is, the researcher presented students with almost akin tasks and yet considered the new sociopolitical context. The researcher has provided feedback considering the rubrics. In other words, the researcher presented the correct procedure, the 'answer' for each particular task. In this context, the feedback, comprised of step-by-step procedures students were required to perform, in order to effectively evaluate online content, the rubric itself, and the final correct, i.e., 'mastery level' response. The feedback was available, that is, were shared with students just right after submission of the answer. In this way, making the criteria for evaluation of the students' responses available (public), the researcher has integrated feedback as a part of the online learning process that aimed to foster, enhance students' knowledge by means of enabling them to reflect upon their individual capability, self-evaluate their relevant knowledge and skills.

The table below summarizes all five formative assessments and the performance of the students.

Table 4.2 *Students' digital literacy (the COR) performance*

Assessment and Competency	Description	Student performance / Total number of students
1. Social Media Video Tasks Assessing *"Who Is Behind the Information?"*	Evaluate the strengths and weaknesses of a video posted on YouTube. Video uploaded and shared by *Murat Muratoğlu* on the official YouTube channel.	22 students in total (100%) 1 mastery (5%) 4 emerging (18%) 17 beginners (77%)
2. Website Reliability Tasks Assessing *"Who Is Behind the Information?"*	Using any online sources, explain whether the website *Bizimaile.com,* is a reliable source of information about children's health.	22 responses in total (100%) 3 mastery (14 %) 1 emerging (5%) 18 beginners (81%)

Table 4.2 (Continued) *Students' digital literacy (the COR) performance*

3. Claims on Social Media Task Assessing "*Who Is Behind the Information?" and "What Is the Evidence?*"	Evaluate the strengths (Question 1) and weaknesses (Question 2) of a tweet. Students read a tweet by *Ufuk Akcigit* (Professor of Economics) and explain why the tweet (related to the subject of the *"Women in Academy"*) might or might not be a useful source of information.	20 students in total (100%) 2 mastery (10%) 14 emerging (70%) 4 beginners (20%)
4. Researching a Claim Task Assessing *"What Do Other Sources Say?"*	Use an open Internet search to decide whether "*Mel Gibson became a Muslim?*".	22 responses in total (100%) 19 mastery (86%) 2 emerging (9%) 1 beginner (5%)
5. Article Evaluation Tasks Assessing *"What Do Other Sources Say?"*	Explain whether an article (*column) regarding *Istanbul Convention* is a reliable source, using any resources available online.	17 responses in total (100%) 4 mastery (24%) 10 emerging (58 %) 3 beginners (18%)

As seen in the table above, most of the students clearly had experienced some difficulties with executing fact-checking strategies, namely, 'lateral reading' strategy as well as 'click restraint' and thus, were not able to effectively evaluate digital content at the beginning of the study. That is, though the researcher had introduced the 'lateral reading' strategy from the first week, most of the students were unable to grasp the technique and the very idea behind the strategy. Nevertheless, the feedback presented after each assignment, demonstrating the procedure, i.e., how to carry out these strategies, eventually, helped out the students, and they rather realized the point, that is, the approach, and to a certain extent, has understood how to fact-check.

For the first-week assignment students were required to evaluate a video shared on YouTube by Murat Muratoğlu. Only one out of 22 students, has taken into consideration the author of the video, that is, the author's real identity and credentials. Accordingly, only one student provided a reasonable argument based on found information. In this context, successful students were required to locate reliable information about the author of the video and provide an argument about how the author's identity and credentials affect the purpose of the video. Successful students were required to find out (locate

online) that the author's surname in fact is not real (nickname), and that the author is a journalist working for one of the leading Turkish newspapers, not to mention that the author has a degree in economics and had worked in relevant jobs as a specialist, and therefore, he can be considered as an expert. Moreover, students were required to take into consideration the political leaning of the author himself, including the alignment of the newspaper he is working for (i.e., where the newspaper sits on the political spectrum), and accordingly, explain how the author's credentials, his background (job), might have affected the purpose of the video. That is, students were supposed to find out that the video is a commentary with a criticism. Only, four students could locate a piece of information about either the author of the video or about the author's experience (e.g., author's job); however, they could not explain how particular information affects the video's purpose. The rest of the students, that is, 17 students, had provided irrelevant explanations based on the content of the video. In other words, students had watched the video without considering the author, trying to guess whether information and claims presented in the video are true or false. Thus, these students, in fact, had practiced a vertical reading strategy instead of a lateral reading strategy. Below is an example of students' responses who realized that the author of the video is a journalist, however, could not clearly explain how that information affects the reliability of the video:

> "I would not trust the video since the author of the video had not provided any references for his claims below the video. Moreover, I could not locate any information online about the author of the video as well as his identity. I had briefly analyzed his official YouTube channel and discovered that he is a journalist working in the Sozcu newspaper. In order to trust a particular video, I need to search up online his every sentence (claims). Nevertheless, I think that the video is more based on claims and hypotheses rather than facts. Moreover, the author of the video had disclosed on his YouTube page that 'all the commentary found here are based on his own analysis."

(Student Y)

For the second assessment, students were required to evaluate a website. Somewhat sectarian (religious sectarian)-the website provides information and news on a number of subjects. To narrow down the analysis, the researcher has provided a direct link to a web page, requesting to evaluate the content on a particular webpage taking into account the articles on children's health. To be considered as successful, students were expected to find out *"Who is behind the information?",* in this case behind the website. Accordingly, after a quick review, students were expected to find reliable pieces of

information on the Internet, a piece of evidence that would suggest that the website is affiliated with a sect or a movement. In this context, a fact that the site is affiliated with a sect is apparent, recognizable due to religious symbols (a quick scan through the main page provides obvious clues); however, only 3 out of 22 students had succeeded and provided evidence that demonstrates that the site is directly affiliated with one of the sects in Turkey. Thus, only 3 students, had pointed out that the information provided on the site, and particularly on children's health might be considered biased and unreliable. Some students had noticed that the site did not provide a secure connection and thus argued that the website cannot be trusted since the website lacked an SSL certificate. Most of the students once more had failed to adapt the lateral reading strategy and instead had utilized the so-called vertical reading strategy. That is, students, analyzed the articles found on the website and sought to evaluate the information provided on those articles, based on their intuition and prior knowledge. For instance, one of the students has stated:

> "I don't think that is a reliable source of information since when I followed the link and briefly analyzed the web page, I could not locate any official statistics or data. That is, it seemed to me that they had not presented any references."

> (Student D)

Some of the students came to a conclusion that the content presented on the site had been provided by a pediatrician and thus they believed that the information is reliable, however, none of these students provided any information about the pediatrician, i.e., the author of those articles.

Below is an excerpt of one successful student who demonstrated both vertical reading and lateral reading strategies.

> "When I entered the site by clicking on the link, I have noticed that there is a lot of religious info on this site. From the footer section of the website, I found out that the site belongs to ('x' organization) and is sponsored by the ('x*' organization). From that information, I found that the owner of the site is a sectarian and 'islamist'. After I located particular information about the owner of the website, I returned to the link and browsed throughout the page. The webpage presents information on children's health, however, four out of five articles that were displayed here, are under the same name, Dr. ('*'). When I googled the doctor's name, I found some information about the doctor. Nevertheless, all related information had been presented in the secondary sources. Moreover, most detailed information had been presented on the Facebook Page and narrated by the doctor herself. Ultimately, after thorough research, I can argue that the doctor and the organization that she claims she is working for cannot be

trusted. That is, presented information is unreliable since I could not locate any official/reliable evidence regarding that doctor and her expertise"

(Student P).

The third task was designed to gauge students' abilities to assess claims (assertions) on social media. In this context, assertion has been presented in form of a tweet that had been shared by an academician. The author of the tweet is a respected academician and the particular tweet, in fact, presents a piece of objective information, that is, findings that are based on official statistics, i.e., Council of Higher Education (YÖK) statistics. The tweet presenting a graph and relevant explanations also provided a link to the academician's personal blog. There, the author provides a broad explanation of the findings and methods of analysis. Accordingly, successful students were required to follow the link and quickly analyze the relevant content. In this particular task, students were addressed with two questions. These questions aimed to identify whether the students are capable to evaluate the strengths and weaknesses of the social media content, in this case, a tweet. To simplify the task, the researcher selected somewhat objective content on purpose, considering that the previous two tasks were too challenging for the students.

The third task has focused on two competencies: 1. "Who Is Behind the Information?" and 2. "What Is the Evidence?". To be considered as successful (mastery level performance), students were required to (a) identify that the author of the tweet is a renowned scientist and academician, providing external links to reliable sources; and (b) argue that the tweet is based on reliable information. In other words, students were required to find reliable information about the author online and click on the link that led to the academician's blog, and there the students were required to quickly analyze the reliability of the information. Considering that the author is an expert, he cites and presents references for the scientific work. Accordingly, after a quick analysis student should have realized that the content of the tweet and the author can be regarded as reliable. Moreover, successful students were required to provide arguments for their conclusion, by presenting reliable external links (sources) as evidence. Below is a response of a student who has performed a vertical reading at first, analyzing the author's Twitter account, and then executed a quick search on the Internet to verify his findings.

"The language of the tweet is clear and correct. Tweet's owner is followed by 14.000 people, and the bio section of the account is written well and presents some details. That is, the owner of that account pointed out that he is a Professor of Economics at the University of Chicago

157

and that he has an analogous account where he shares his tweets only in English. He has indicated that the graph is based on the YOK data, pointing out a specific time. It seems that nothing is absurd with his Twitter profile and related header image. When I googled his name online, I noticed that the name and credentials, do coincide."

<div align="right">(Student R)</div>

However, the same student did not take into account the link presented within the tweet and found faults with the graph, stating:

"The graph presented in the tweet does not look as professional made. The graph is of poor quality and too simple. The language in the graph is not accurate. Abbreviations and initials written in the lowercase are rather wrong and are salient."

<div align="right">(Student R)</div>

 Considering that the third assessment meant to assess two COR competencies simultaneously, in order to avoid complexities and confusion during categorization, researcher and independent rater, had decided to consider successful all those who could present enough evidence; demonstrate good reasoning, considering either of two competencies. As a result, most of the students had presented arguments that indicate the grasp of the first competency, which is "Who Is Behind the Information?". That is, most of the students, have affirmed that they would have trusted the particular source of information, since the author is a professor, and the data presented in the tweet, "seems" reliable. Nevertheless, the majority of students fell lack of providing strong evidence to support their arguments, not to mention the fact that they could not provide any evidence that would have supported their guesses, that is, any evidence regarding the "seemingly reliable information" presented in the tweet. Only two out of 20 students had performed comprehensive research and reached a sound conclusion that was based on particular evidence. Four students did not provide any relevant explanations nor a piece of evidence that would support their reasoning, and therefore, were assigned to the beginning level.

The fourth assignment, "Researching a claim", is designed to assess and ultimately enhance students' competency that is identified as *"What Do Other Sources Say?"*. Moreover, the assignment aims to gauge students' abilities to make effective online research and evaluate the claim, that might be considered fake news, based on comprehensive analysis. In this context, the assessment is meant to enhance students' understanding of the fake news concept, as well as assess students' understandings of the subjects that have been introduced within presentations, that is, how do the (Google's) search algorithms affect the search results, and how well did students has grasped the

click-restraint (fact-checking) strategy. To find a "provoking" claim that would engage students' interest, the researcher had examined fact-checking sites such as Teyit.org and Malumatfurus.org and stumbled upon a certain claim, a kind of popular "clickbait" in Turkey. Accordingly, a claim was about that one of the Hollywood stars converted to Islam and became a Muslim. As a matter of fact, the claim had been presented as news in several newspapers. Though the claim (clickbait) was found to be false and baseless, the newspapers had neither deleted nor provided official apologies for presenting fake news.

The researcher had presented a particular claim for evaluation on purpose so that the students might have an opportunity to stumble upon fact-checking websites that demonstrate why the particular claim is fake. In other words, the researcher aimed to indirectly demonstrate to students how such claims are being checked and refuted by professional fact-checkers. In this context, one of the students had stated:

> " A footnote; it seems like the answer for the assignment is directly presented in the link below, with all related explanations and evidence :D (student provides a link to a site*)"
>
> (Student M)

Nevertheless, not all students were able to execute and demonstrate the "click restraint" strategy, and accordingly, ended up on the sites that presented the false claim.

> "I believe that the claim is true. https:// www.* (provides a direct link to a site). Here, the columnist is (*). I believe the claim since news websites (newspapers) ought to present objective and verified information; moreover, news has to be presented by an expert (a journalist). Factuality (veracity) does matter. The journalistic profession is based on veracity (factuality) and because of that, I believe that particular claim is true. To support my conclusion, I find another news website, https:// www.* (provides a direct link to a site). The site presents similar information".
>
> (Student G)

Though the student above, demonstrates a valid point, sound argument, both news websites belong to the same media group. For that reason, the similar content presented on both sites is merely reshared. Here, the student probably has failed to adapt the click restrain strategy and thus, browse throughout the other search results.

Another student, performing an online search, elaborates:

> "Taking into account a subject matter of religion, it doesn't matter for me that someone claims that another person has converted to Islam. I search for direct evidence, that is, the words (affirmation) of that person (Mel Gibson), and hence when I googled that claim, both in Turkish and English, I could not find any piece of information that would verify that the claim is true (Wikipedia link*). Moreover, Mel Gibson owns a church. (External link*)"

On the other hand, after presenting the particular argument, the same student, at the end concludes:

> "Well, news website is a news website. Of course, not every news website can be considered as reliable, however, particular news (claim), is not so phenomenal, so I do not think that particular news (claim) is false."

As seen in the excerpts above, both students who believe that the piece of information, the claim is true, give a credit to a news website (a source of information). Here, students took at face value the source, and trust the news website, since the news, even magazine ones, presented in (established) news media supposed to be reliable. That is, students, subscribe to a notion called ethical journalism; however, online media, to generate engagement, presents such kind of misleading and "sensational" information (claims) as news, aiming to attract public attention, and thus such misleading content somewhat functions as clickbait. That is, students have believed in the credibility of online (magazine) articles, considering that these online newspapers are popular in Turkey.

> One of the students shared his frustration regarding the misleading content, stating:
>
> "I don't believe. False and fake information roams around. To entice people's attention and get a profit, many websites are messing around with us and publishing such kind of news. When I type the search terms to perform an online search regarding the claim, these kinds of websites appear first in the search ranks. However, when you enter these sites and analyze, read the content, you realize that you cannot find any concrete information, and then, you have to go back and perform the same search again."

As seen in the excerpts above, the student clearly failed to adapt the "click restraint" and "lateral reading" strategy, and accordingly, the student struggled to find a piece of relevant information, locate reliable sources online. Furthermore, analyzing responses, the researcher realized that majority of the students found it hard to distinguish news (factual information) from opinions (claims).

The final assignment included a somewhat controversial subject for that time. For the "Article Evaluation" assignment, the instructor presented students with a direct link to an online article that express an opinion, a commentary regarding the "Istanbul

Convention". The convention signed in Istanbul in 2011, is related to the subject of preventing violence against women.

The final formative assessment, aimed to enhance and assess students' abilities of online reasoning, and particularly, the COR competency known as "What Do Other Sources Say?". Students were required to proceed to online content via the link and analyze the content accordingly. To be considered as successful (mastery level), students should have realized that the content is merely commentary, also known as a column, in the first place. In other words, students were expected to immediately perceive that particular piece as a commentary written by a columnist, not a journalist. In this context, unlike news, columns are pieces of information that present an opinion (perspective of the author) regarding a topic, and in this context, the Istanbul Convention. Hence, students should have argued that the information is not an article and thus, is rather subjective. Moreover, students were supposed to provide reliable information regarding the subject matter, that is, the "Istanbul Convention".

Several successful students who found reliable information about a particular subject had realized that the column meant to persuade, to incline readers towards the author's belief. Nevertheless, many students, reading the column, decided to perform a vertical reading strategy, and thus, investigated the author's statements as well as the news website (source of information), arguing that the news website is rather partisan. Likewise, some students, reviewed the author (columnist), arguing that the author is partisan. Though the author is a member of a political party, the assignment is designed to assess students' abilities to find reliable sources regarding the subject and not the author. Accordingly, based on predetermined criteria, the researcher considered successful those, who had provided relevant and reliable information about the Istanbul Convention and had argued that particular piece of information is rather biased.

Below, is a response of a student who read the column and thereafter, reviewed the author (columnist) of that particular piece of information.

> "Frankly speaking, I do not think that information presented here is a reliable source, and the reason is that the author presents his personal opinion and commentary. Besides, when I performed a search online and researched the author of the piece, I found that he is an ex-Minister of Foreign Affairs, and I could not locate any relevant information regarding his expertise on a particular subject. He holds an academic degree in sociology, and for this reason, the presented piece is written in a freestyle, more like a commentary rather than a piece written in details and that provides references. For that reason, I do not trust particular

information and would not have used it as a reliable source. (Student submits Wikipedia links, one about the author of the piece* and another about the Istanbul Convention*)".

Reviewing students' responses, the researcher realized that most students are unaware of the difference between a reporter and a columnist, a column and an article, subjective information, and objective information. Accordingly, most students struggled to detect bias in a presented content. Nevertheless, the researcher had also observed progress in students learning. That is more and more students, began to question "Who is behind the information?". In this context, though for the final formative assessment students were required to revisit the central subject, i.e., review a subject matter that is being debated in the column; assessing the author of the column, has helped many students to reach the right conclusion.

To reinforce students' learning, two more assessments had been introduced as final assignments. Nevertheless, the two last assignments were used rather as parallel assessments, since the researcher, introducing the assignments, had pointed out that the last assignments will be considered as kind of tests, that is, the researcher will evaluate how did they grasp the fact-checking strategies introduced during the last weeks, and thus, the researcher has pointed out that he would not provide immediate feedback post submission. The last assignments were meant to measure to what extent students could perform an online search on their own. Still, the researcher as a true instructor of the course recommended reviewing the first-week assignment and related feedback if students want to succeed.

Though rather unreliable in terms of the 'test' reliability and validity, the two last assignments had been respected as parallel assessments by the researcher. That is the researcher, hoped to assess the same COR competency by addressing a similar task. Hence, the first parallel assessment corresponds to the first-week assignment, that is, a task known as "Assessing the Social Media video". The task aimed to measure students' COR competency known as "Who Is Behind the Information?". On the other hand, the second parallel assessment corresponds to the third-week assessment, a task known as "Claims on Social Media". The task aimed to measure students' two different COR competencies, namely, "Who Is Behind the Information?" and "What Is the Evidence?".

Here, it is important to note that though so-called parallel assessments were unreliable, the self-efficacy scale, used within the study, are both reliable and valid, as stated before, and thus, these instruments, that assessed prospective teachers' perceived

competencies, with regard to media and information literacy, by implication, could demonstrate the effectiveness of the assessments used within the study. In other words, the results yielded by means of scales could truly demonstrate the extent of effectiveness of formative assessments.

For the first 'parallel' assessment, as seen in the table 5.3 below, the researcher as a task, addressed students a specific video that has been published in an authentic YouTube channel. In other words, a source, YouTube channel under Flu Tv name and the video has been chosen on purpose. Particularly, the Flu TV YouTube channel is one of the most popular video channels among young adults with more than 500.000 followers, that uploads and shares educational and entertaining (authentic) video content in Turkish. As for the speaker in the video, Emre Alkin is a Professor of Economics. To be considered as successful, students were supposed to find out "Who is Emre Alkin?" and verify his credentials. Moreover, students were supposed to argue that a particular video, is a narrative that includes a commentary. Thus, educational video is rather subjective since it includes opinions, more or less, based on facts.

Table 4.3 *Parallel assessments***.** *Additional assignments***,** *designed to reinforce learning.*

Parallel Assessment #1	Evaluate the strengths and weaknesses of a video posted on YouTube.	21 students in total (100%)
Social Media Video		5 mastery (24%)
	The video starred Emre ALKIN is	13 emerging (62 %)
Tasks Assessing	called "What is money?".	3 beginners (14%)
"Who Is Behind the	Video has been uploaded to Flu TV	
Information?"	channel on YouTube.	
Parallel Assessment #2	Evaluate the strengths (Question 1) and weaknesses (Question 2) of a tweet.	14 in total
Claims on Social Media		
		5 Mastery (36 %)
Task Assessing	Students explore a tweet by *Ozan*	6 Emerging (43%)
"Who Is Behind the	*Bingol* and then try to explain why	3 Beginners (21%)
Information?" and	the tweet might or might not be used	
"What Is the Evidence?"	as a useful source of information.	

Considering performance, most of the students reviewing the video, reached a conclusion that the video includes a commentary and therefore, is subjective. Some

students performed an online search, presenting Emre Alkin's biography and arguing that he is an expert in his related field. Based on that finding, students disregarding the purpose and the content of the video had stated that they would rely upon, trust the information presented in the video. In general, students demonstrated better performance compared to the analogous, first assessment. Some students expressed that they were glad to analyze the video, stating:

> "First of all, thank you for being a reason that made us watch a particular video. The video was enlightening, and I did enjoy watching it. The statements in the video, mainly based on respected professor's opinions..."

(Student F)

> "Related video has been published on Flu TV, YouTube channel that I also subscribed to. This channel has been created by Ilker Canikligil, and at first focused and shared only specific videos related to cinema, film industry, film technique, and movie reviews. Subsequently, the host of the channel had decided to switch to a new concept that would include experts in diverse fields (economy, literature, gastronomy, etc.); in order to enlighten the viewers. Of course, since all videos commonly last 30 minutes, invited experts should have considered the audience and thus, adapt more common, simplified language in order to reach every viewer, be lucid and stay understandable…."

(Student H)

For the second parallel assessment, the researcher once more addressed students to analyze a tweet that had been published by Ozan Bingol, an expert in his related field. The particular task aimed to assess two competencies at once. In this context, the number of students who executed the task had dropped significantly due to approached semester exams. Accordingly, only 14 students have provided responses to the final assessment. Nevertheless, among these 14 students, only three demonstrated the beginning level of performance.

To conclude, considering that the number of students for the first parallel assessments almost match, considering that both assessments gauge the same skill, 22 at pre and 21 at the post; by comparing the numbers, the researcher was able to perceive a difference, an improvement in students' learning. Specifically, comparing the numbers of those who performed well, that is, demonstrated mastery level performance at first and second assessments, the researcher observed that the number of students performing fine increased from 1 student to 5; whereas the number of those who had demonstrated emerging level of performance also increased from 4 to 13 individual. On the other hand,

164

the number of students who failed to perform online evaluations correctly decreased from 17 to 4.

It was evident from the students' responses that they have demonstrated progress in learning the 'lateral reading' strategy, i.e., advanced in the COR competencies. Specifically, most of the students improved individual performance at one particular COR competency, namely, "Who is behind the information?". In other words, students learned to question the source of information.

To find whether improvement in students' learning in respect to the COR competencies is significant, the data has been subjected to analysis that had been carried out by means of IBM SPSS Statistics (Version 24). The findings of the first parallel assessment are presented below.

- Wilcoxon Signed-Rank Test revealed a statistically significant improvement in students' COR competency known as "Who is behind the information?" following participation in training (e-learning), $z = -3.357$, $p < .05$, with a large effect size ($r = 1.44$).

Considering the second parallel assessment, the researcher performed the same nonparametric analysis, Wilcoxon Signed Rank Test. Respectively, 12 participants' data, only those who took the pre and post-test, had been subjected to analysis. The findings of the analysis of the second parallel assessment are presented below.

- Wilcoxon Signed-Rank Test revealed a statistically significant improvement in students' COR competencies known as "Who is behind the information?" and "What Is the Evidence?" following participation in training (e-learning), $z = -2.236$, $p < .05$, with a large effect size ($r = 0.98$).

For the note, all the effect sizes calculations were performed according to Lenhard and Lenhard (2016).

Taking into account the results based on analyses, the researcher can draw a conclusion that the intervention, and specifically, online training that aimed to enhance students' fact-checking skills, has a positive effect on students' 'COR' performance.

4.3 Research Question 2.

Is there a significant difference in students' new media literacy self-efficacy scores after completing the "Digital Media Literacy" course?

To answer the question, the researcher had performed the Wilcoxon Signed Rank test, since the assumptions required to conduct a parametric test were not secured (Pallant, 2016).

Tested in terms of reliability and validity (p.841), the New Media Literacy self-efficacy scale (NMLS) consists of 35 items based on a 5-point Likert scale (Koc & Barut, 2016). Beneath, the researcher presents only those items of the scale that indicate a significant difference.

In this context, the researcher assumed that intervention, coined as Digital Media Literacy, positively affects prospective teachers' new media literacy. Accordingly, the researcher expects that the subjects would demonstrate significantly higher mean of the posttest scores than the mean of the pretest. Specifically, the researcher expects those particular items related to the dimensions defined as "Functional Consumption (FC)" and "Critical Consumption (CC)" would demonstrate the positive statistical significance, since the intervention, predominantly had focused on consumption of the media rather than presumption (production and consumption).

As seen in the figure below, the New Media Literacy (NML) scale is based on a four-factor model proposed by Chen, Wu, and Wang (2011).
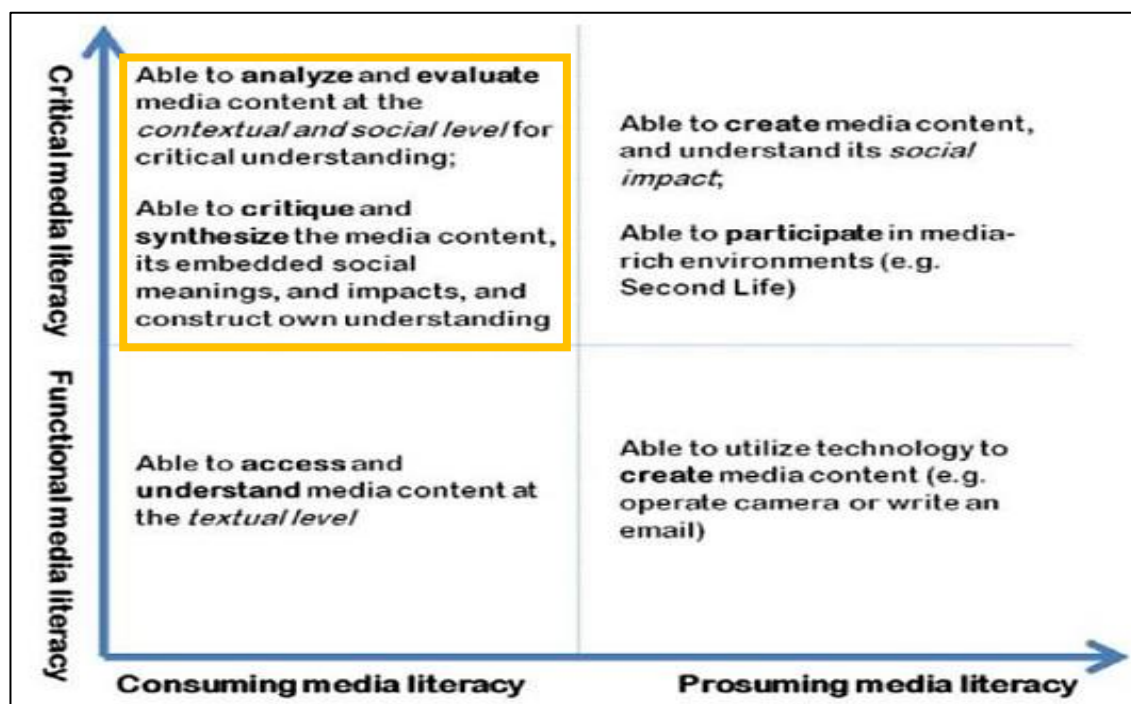

Figure 4.5 *Conceptual representation of new media literacy skills (Chen et al., 2011).*

Placed along the two continuums from consumption to presumption and from functionality to criticality; the first upper quadrant of the figure, i.e., where a critical media literacy intersects with the consuming media literacy, i.e., a critical consuming component of the NML, has been considered as the focus of the current study. That is, the researcher expected positive outcomes within the items related to the first upper quadrant of the figure, outlined in yellow.

New Media Literacy scale items that indicate statistical significance are presented below:

- Wilcoxon Signed-Rank Test revealed a statistically significant improvement in subjects' posttest scores of an item under the number one, related to Functional Consumption (FC), namely, "I know how to use searching tools to get the information needed in the media", following intervention (online learning), $z = -2.310$, $p < .05$, with a medium effect size ($r = .60$).

- Wilcoxon Signed-Rank Test revealed a statistically significant improvement in subjects' posttest scores of an item under the number four, related to Functional Consumption (FC), namely, "I realize explicit and implicit media messages", following the intervention, $z = -1.613$, $p < .05$, with a small effect size ($r = .37$).

- Wilcoxon Signed-Rank Test revealed a statistically significant improvement in subjects' posttest scores of an item under the number nine, related to Critical Consumption (CC), namely, "I am able to determine whether or not media contents have commercial messages", following the intervention, $z = -1.732$, $p < .05$, with a small effect size ($r = .47$).

- Wilcoxon Signed-Rank Test revealed a statistically significant improvement in subjects' posttest scores of an item under the number seventeen, related to Critical Consumption (FC), namely, "I can assess media in terms of credibility, reliability, objectivity, and currency", following intervention, $z = -2.308$, $p < .05$, with a medium effect size ($r = .60$).

- Wilcoxon Signed-Rank Test revealed a statistically significant improvement in subjects' posttest scores of an item under the number twenty-four, related to Functional Prosumption (FP), namely, "I can make a contribution to media by reviewing current matters from different perspectives (social, economic, ideological, etc.).", following the intervention, $z = -1.812$, $p < .05$, with a medium effect size ($r = .61$).

On the other hand, the following items related to Functional Prosumption, demonstrated negative ranks, and thus, indicated a significant decline in students' self-efficacy perceptions of the relevant new media literacy knowledge and skills.

- Wilcoxon Signed Rank Test revealed a statistically significant reduction in subjects' posttest scores of an item under the number twenty-two, a statement related to Functional Prosumption (FP), namely, "I can use basic operating tools (button, hyperlinks, file transfer, etc.) in the media" following intervention, $z = -1.811$, $p < .05$, with a small effect size ($r = .37$).

- Wilcoxon Signed Rank Test revealed a statistically significant decrease in subjects' posttest scores of an item under the number twenty-three, a statement related to Functional Prosumption (FP), namely, "I am good at sharing digital media contents and messages on the Internet.", following intervention, $z = -1.732$, $p < .05$, with a small effect size ($r = .30$).

- Wilcoxon Signed Rank Test revealed a statistically significant decrease in subjects' posttest scores of an item under the number twenty-five, a statement related to Functional Prosumption (FP), namely, "I am able to rate or review media contents based on my personal interests and liking", following intervention (online learning), $z = -1.897$, $p < .05$, with a small effect size ($r = .41$).

Note:

All the effect sizes calculations were performed according to Lenhard and Lenhard (2016).

Taking into account the students' self-efficacy beliefs regarding new media, an item under the number seventeen indicates that students, after being subjected to intervention, believe that they are able to evaluate the reliability of online content; and thus, particular finding entails that the intervention (online learning), had reached a main purpose of the study. Moreover, a particular statement indicating students' ability to "assess media in terms of credibility, reliability, objectivity, and currency" (Koc & Barut, 2016), based on self-efficacy theory (Bandura, 1997), validates the findings presented under the first question of the study. That is the findings suggest students', to a certain extent, has learnt how to evaluate digital information and thus, learning provided online by means of the assessments, has been fruitful. In other words, the researcher might argue that prospective teachers' digital and media literacy competencies, that enable them to effectively assess the reliability of social media content, and specifically, the COR competencies that were assessed and cultivated throughout the study; has been promoted.

Similarly, the items that indicate significant difference, namely, an item under the number one, related to Functional Consumption (FC), namely, "I know how to use searching tools to get the information needed in the media", an item under the number four, related to Functional Consumption (FC), namely, "I realize explicit and implicit media messages", and an item under the number nine, related to Critical Consumption (CC), namely, "I am able to determine whether or not media contents have commercial

messages", rather reveals that the intervention, largely directed at cultivating skills and knowledge of media consumption, has raised students' relevant knowledge and skills on critical (and functional) consumption of media messages

Furthermore, an item under the number twenty-four, related to Functional Prosumption (FP), namely, "I can make a contribution to media by reviewing current matters from different perspectives (social, economic, ideological, etc.); reveals that the students, as consumers and producers of online media, are able to not only assess all kinds of digital information but also provide and share all kinds of digital information.

On the other hand, three items of NMLS related to Functional Prosumption, revealed that students had somewhat realized a scarcity of "functional prosumer" skills. In this context, Koc and Barut (2016), define functional prosumers as capable and involved "in production of new media content in various media platforms" (p.835). Accordingly, most of the students, unexpectedly, perceived that they are not ready for the production of new media content. To elicit the reasons behind negative ranks (perceived inability), the researcher has analyzed qualitative data. Moreover, the researcher has asked the interviewees what kind of content they share and whether they create and share new information (news/claims) on social media platforms with others.

> "I do not share (news/stories) at all. I use social media platforms mostly for personal, entertainment purposes. So, even if I share, I share entertaining, personal and educational content on my social media accounts".
>
> (Interviewee A)
>
> "I do not share news, news stories in general. Occasionally I share my personal photographs, or on other social media platforms, from time to time, I create educational content."
>
> (Interviewee B)
>
> "Given the current condition of the country, I prefer not to share any personal opinion on social media platforms, whatsoever. So no, I don't share (new stories/news)".
>
> (Interviewee C)

Considering that the intervention focused on fake news, and media literacy in general, within the intervention, the researcher has introduced MIL subjects related to media, news, social media, journalism. That is, the researcher has addressed MIL education and digital literacy training, at the same time. In this context, while the education part of the intervention introduced media literacy subjects, the training part was aimed at assessing and cultivating critical thinking skills towards digital content. Accordingly, for the posttest, students inadvertently were somewhat primed to consider media literacy subjects and sociopolitical domain when it comes to functional prosumer

skills within NMLS. In other words, senior students studying at the Department of Computer Education and Instructional Technologies were not likely to stand in need of functional prosumer (FP) skills, if suppose those skills are implied under a different domain, and not in a particular context.

To illustrate the misinterpretation, some students have pointed out that they were hesitant to put in writing their personal opinion, articulate individual thoughts while assessing digital content. Nonetheless, assessments were designed as much as thoughtful, that is, the researcher had taken into account political polarization and had tried to avoid controversial and delicate subjects.

Nevertheless, to illustrate the point of argument, below are excerpts of some students' comments, for instance:

> "In my opinion, everything was fine. Though, I had difficulties in expressing some of my views (within the assignments)."

(Student F)

> "They name it, present it as if it is a freedom (freedom of speech); when presenting news, and yet when someone writes any comment under the news (shared on social media), the users are blacklisted, 'go to' Silivri."

(Student G)

To conclude, as seen in the excerpts above, one possible explanation behind negative ranks for any items that indicate skills needed to be a Functional Prosumer (FP); is rather based on the particular context. In other words, considering that the "self-perceptions regarding particular behaviors are domain sensitive" (Kurbanoglu et al., 2006, p. 732), perceived inability or wavering of students to create and share media messages and other akin information on the Internet, might be based on students' perception considering specific domain and situation.

4.4 Research Question 3.

> Is there a significant difference in prospective teachers' information literacy self-efficacy scores after completing the "Digital Media Literacy" course?

As in NMLS analysis, to answer the question, the researcher had performed the Wilcoxon Signed Rank test, since assumptions required to conduct parametric test were not secured (Pallant, 2016).

Tested in terms of reliability, Information Literacy Self-efficacy scale (ILSES) based on a 7-point Likert scale, considered as "reasonable (0.84)" (Kurbanoglu et al. 2006, p. 737). On the other hand, considering the current study, the 40-item scale has been designed and tested before the proliferation of social media platforms such as Facebook, Instagram, and Twitter; and thus, might be considered outdated. Nevertheless, a reason behind using the scale, was to test students' Information Literacy self-perceptions, and considering that particular scale is available both in Turkish and English, utilization of the scale within the study, had been considered practical. Moreover, considering that the scale was designed to assess 'traditional' information literacy, which does not include social media environments based on the fact that the scale had been published in 2006, the researcher expected to compare and contrast the unique and relevant findings.

The researcher expected that the subjects would demonstrate significantly higher mean of the posttest scores than the mean of the pretest, with respect to several items of ILSES. In this context, the ILSES comprises of 7 domains, where the researcher, expected that relevant items of domains D and E, namely, "Assessing and comprehending information" and "Interpreting, synthesizing, and using information" (Kurbanoglu et al. 2016, p. 743), would indicate statistical significance.

ILSES items that indicate statistical significance are presented below:

- Wilcoxon Signed Rank Test revealed a statistically significant decrease in students' posttest scores of the item, related to (C) Locating and accessing the resources domain, namely, "Interpret information on the library catalogue", following the intervention, $z = -1.795$, $p < .05$
- Wilcoxon Signed Rank Test revealed a statistically significant decrease in subjects' posttest scores of an item, related to (D) Assessing and comprehending information domain, namely, "Recognize errors in logic", following the intervention, $z = -1.807$, $p < .05$
- Wilcoxon Signed Rank Test revealed a statistically significant decrease in subjects' posttest scores of an item, related to (E) Interpreting, synthesizing, and using information domain, namely, "Synthesize newly gathered information with previous information", following intervention, $z = -1.897$, $p < .05$
- Wilcoxon Signed Rank Test revealed a statistically significant increase in subjects' posttest scores of an item, related to (E) Interpreting, synthesizing, and using information domain, namely, "Paraphrase the information", following intervention, $z = -1.809$, $p < .05$

As seen in the results above, three out of four ILSES items were ranked negative in the posttest. That is, prospective teachers have indirectly indicated that they lack fundamental abilities (competencies) such as, "interpret information on the library catalog", "recognize errors in logic" and "synthesize newly gathered information with previous information". Considering Bloom's taxonomy (1956), understanding, and applying new information (knowledge) as two particular categories, are below higher order thinking skills (HOTS), i.e., critical thinking skills, namely, analyze, evaluate, and create. In other words, students have indicated that they require to master the lower-level skills before they can engage in higher-order thinking. The scale results might suggest that inability to analyze, synthesize and evaluate the new information for students is a real problem. In this context, OECD (2019) PISA 2018 reading assessment results demonstrates similar findings, and that is, the students lack critical thinking skills. The PISA 2018 reading assessment as well as ILSES negative ranks, clearly suggest that the younger generation needs to acquire basic information literacy skills prior to proceeding to higher order thinking skills.

Furthermore, students' perception that they are inefficient at "recognizing errors in logic" and "synthesizing newly gathered information with previous information", might stem from the fact that the majority of the students performed "vertical reading" strategy within the tasks and struggled to understand and apply new information. Here, new information, tasks for evaluation were regarding the economy, children's health, convention, etc. That is, apparently some students have been challenged by brand-new information and felt puzzled since they had never assessed the credibility of online sources. For instance, one of the female students stated that she "does not know much about the economy" since she "never watches videos on the subject" and as a result, she expressed that she had struggled to evaluate particular YouTube video and could not decide on, whether the claims introduced in that video are true or false. Nevertheless, the point is, the researcher had instructed to perform a lateral reading strategy instead of a vertical reading strategy whenever students come across an unfamiliar source. That is, students were not even supposed to watch the video; however, based on analysis of the student's responses, the majority of students had performed a "vertical reading" strategy instead of introduced, lateral reading strategy. That is, students had 'read' the information from the beginning to end, and ultimately, had realized that they cannot even understand, interpret new information, not to mention, they could not evaluate that novel, unfamiliar

digital content. Here, the problem might be based on (a) students did not review the feedback (b) students did not read presentations (c) students did not understand the new strategy (d) may be the researcher was unable to explain the essence of the strategy at first; or the manual, instructions on how to perform strategy were lost in translation. Nevertheless, particular learning has demonstrated the significance of enhancing the literacies, i.e., digital, media, and information literacy, and more importantly, how significant it is to help students to assess unfamiliar digital content. What is more, at the end of the day (study), the researcher has received mostly positive comments as well as some suggestions, students' comments regarding the drawbacks of the intervention. Below, the researcher presented an excerpt to elaborate on the issue related to misapprehension.

> "Instruction was not as challenging, and yet, at first I couldn't grasp what and where should I look for. But after I received and reviewed the feedback, I realized that I was on the right path. The only thing I need to do is improve my research skills."
>
> (Student A)

As seen from the excerpt above, the student felt puzzled at first and was unable to evaluate the content, however, gradually he could improve his learning. Here, students' puzzlement is natural for students were discovering a new approach where they had to execute completely different types of strategies to evaluate online sources. That is, unlike the traditional checklist method that is used to evaluate information, students were supposed to leave unfamiliar sources after a quick scan and start a search on the Internet. In other words, instead of analyzing, reading the unfamiliar sources from a top to bottom, students were supposed to leave the source and perform a lateral reading strategy, instead of just reading that source.

In this context, though the researcher, aimed to cultivate a new fact-checking strategy, the majority of students as a habit did perform vertical reading instead of lateral reading. In other words, students did read the articles on unfamiliar web pages, did watch YouTube videos from the start to the very end, concurrently trying to guess whether the narrative within the video is accurate or not. Thus, quitting a habit, i.e., learning laterally instead of vertically on the Internet, has been a real challenge for the majority of the students.

Some students have pointed out that the learning materials correspond to information literacy subjects and left positive feedback about the course.

"Presented content consistent with Information literacy subjects. Learning was fruitful. Before that, I did not know about the existence of alternative fact-checking sites, but now I do know them. In addition, I have cultivated personal fact-checking techniques."

(Student B)

"I have learned a lot of new stuff. Thanks to the course, I could access fundamental information as for media literacy, the subject I did not know much about."

(Student C)

As seen in the excerpts above, students regard media literacy and information literacy as akin subjects, by acknowledging that media and information literacy course, that is, the intervention was of the essence.

4.5 Research Question 4

What are the prospective teachers' reflections on the "Digital Media Literacy" intervention?

To answer the question, the researcher has analyzed the unstructured data collected within and after the intervention. That is, the researcher has analyzed qualitative data collected by means of interviews, assessments, and a final survey. In this context, qualitative data collected by means of the final survey were the most valuable since the researcher asked students to specify the flaws (disadvantages) of intervention. In this context, since students are the central stakeholders of the study, whereat participants' experience and feelings within intervention directly affect the outcomes of the study, the researcher requested students provide honest feedback on instructional content and quality of instruction.

Considering the survey administered online, the researcher has addressed students to answer the following open-ended questions, by considering the intervention:

Questions

1. How do you feel about the asynchronous mode of learning?

2. How do you feel about the quality of instruction? (e.g., did you find the intervention useful or not, -why?)

3. How do you feel about instructional materials? (Please express an opinion on content, e.g., whether the content was unclear, not relevant, etc.)

4. Please, write down your personal suggestions, a brief review on your learning outcomes, specify positive and negative sides of intervention.

174

To enable honest feedback, the researcher requested to submit comments under nicknames. Accordingly, critical comments had been appreciated and presented below. The comments, in fact, revealed the pitfalls of the study. Below are the excerpts that involve suggestions and some critical insights.

Table 4.4 *Opinions of the participants on the intervention*

Critical Insight/Suggestions	Implications for future studies
"Instead of pdf file presentations, you might have considered creating and share video-based lessons or make presentations more visually appealing". (Student G)	Create video-based instruction, or at least, visually appealing presentations
"I don't like to be informed by means of instructive texts." (Student K)	Less text more visually appealing educational content, or at least strive to combine text and imagery. Integrate videos, images, and audios in a course design, create an 'eye-catching' e-learning intervention
"Due to pandemic and my job (a health care worker), I have a very hard time, and for that reason, I am aware that I could not focus on the lesson as much as I had to." (Student M)	Pandemic effect. Provide flexibility in terms of due date for the assignments, for students might have faced financial stress, illness, or family issues amid the pandemic
"Since education during the pandemic is conducted entirely online, the number of assignments to be done on our own increased significantly, for that reason, I could not allocate time for all those assignments. On the other hand, maybe another reason was a lack of motivation and weariness." (Student Y)	Overwhelmed with assignments. Pandemic effect. Pay attention to students' emotional state during uncertain times, get to know whether they are stressed, fatigued, or even feeling burnout
"Long presentations stray from a subject, because of that, every so often I don't want to read presentations; besides, I could not read up on all the presentations due to a number of online lessons." (Student H)	Academic stress. Consider that some students have had to adapt to a new kind of learning, i.e., online learning, and that might have negatively affected their performance. Think about the common stressors, while designing and delivering the intervention

Table 4.4 (Continued). *Opinions of the participants on the intervention*

"Instruction could be better if you had included more than just one content for critical analysis within the assignments so that we could have an opportunity to practice more." (Student F)	Provide extracurricular tasks, reading materials for those who are eager to learn
"In my opinion, if you could have included more authentic (trending) content, more engaging subjects (for analysis) directly related to fake news (fake journalism) proliferating on social media platforms, the study could be much more effective" (Interviewee A).	More authentic tasks, authentic learning materials could be included

As seen in the excerpts above, some students disclosed that too many presentations (pdf files), amid the pandemic made online education consuming. That is, students somewhat have criticized asynchronous distance education. Moreover, some students have commented that they were unmotivated to read "long" presentations on their own; and would have preferred more video-based learning (video lessons) rather than briefings. Other students complained that there were too many assignments to be done. Furthermore, one of the interviewees suggested that the content presented for evaluation within assignments could be more relevant.

Based on the excerpt above, it is obvious that some of the students were unmotivated to learn amid the pandemic, while others had some personal issues. In this context, motivation is one of the factors that affect self-regulated learning (Zimmerman, 1989). Therefore, lack of motivation directly affects individual learning outcomes. Based on the student feedback, one of the pitfalls of the study is that intervention has been administered as asynchronous distance learning and amid pandemic. Though, the researcher at first aimed to administer intervention face-to-face and then, due to crisis mode education, at least synchronously, due to a number of reasons, the study had to be conducted asynchronously. One of the reasons is that during the first weeks, students were unavailable; and thus, since the study had to follow a schedule, the researcher had no choice but to switch to asynchronous learning.

Keeping in mind critical and insightful comments, the majority of students pointed out that the learning was of benefit. For instance,

> "The course of study was not challenging, it sounded interesting, engaging for me; because of that, I could further my individual learning more easily".

176

The same student approved asynchronous mode of learning stating:

> "During the pandemic, I had to move to a new place. Accordingly, I would not have participated if classes were to be provided synchronously. So, for me, that (asynchronous learning) was an advantage."

<div align="right">(Interviewee B)</div>

The majority of the students left positive comments on learning and learning material. Particularly, only one out of five students have indicated that the learning had only partially increased their awareness of the subject matter. In other words, out of 20 students' feedback received 15 had indicated that the teaching was successful. The 'success' here, might stem from the fact that the researcher strived to create engaging and authentic learning materials so that the students would be motivated towards e-learning. For instance, one of the students had pointed out:

> "I think learning outcomes have been reached. It was a fruitful training."

<div align="right">(Student Q)</div>

Another student has implied that learning was engaging.

> "For me, it was entertaining and resembled a detective. The topics and content we were supposed to evaluate were at different levels, and in my opinion, it was not hard at all."

<div align="right">(Students R)</div>

The qualitative data collected by means of assessments, student feedback, and semi-structured interviews, enabled the researcher to interpret the outcomes of the study more thoroughly. Moreover, the researcher gained some critical insights regarding the intervention, where students' comments have helped the researcher to understand the drawbacks of the study. Furthermore, qualitative data enabled to make of possible deductions regarding negative ranks obtained via self-efficacy scales. Ultimately, integrating qualitative data with an experiment (intervention), was the right decision since complementary data truly enhanced the researcher to understand the outcomes of the study and make some critical inferences.

5. CONCLUSION, DISCUSSION, AND IMPLICATIONS

5.1 Conclusion

The purpose of the current study was to raise prospective teachers' awareness regarding fake news spreading on social media. To achieve a particular outcome, the researcher designed and implemented an online course of instruction that involved basic media literacy education and digital media literacy training. To this end, an intervention mixed methods design was carried out as the research design of the study.

In order to reach reliable results, the researcher assigned the New Media Literacy scale (NMLS) as a primary instrument assessing students' new media knowledge and skills. In this context, the New Media Literacy scale in conjunction with the Information Literacy scale (ILSES), were administered before and after the intervention. Both scales were administered to assess senior students', i.e., prospective teachers studying at the Department of Computer Education and Instructional Technology (CEIT), new media literacy, and information literacy self-efficacies. Information Literacy self-efficacy scale, in this context, had been used as a supplementary scale. While self-efficacy scales were meant to assess students' relevant self-efficacy, i.e., beliefs in the execution of particular tasks, the researcher assessed students' actual knowledge by means of authentic assessments. Accordingly, the current study had assessed students' perceived competencies as well as actual competencies with respect to media and digital literacy. In order to thoroughly understand the outcomes of the intervention, the researcher analyzed qualitative data collected within and after the intervention. Qualitative data have been collected by means of open-ended surveys (student feedback), formative assessments (student responses and comments), and semi-structured interviews. Accordingly, qualitative data collected within and after intervention truly enhanced understanding of quantitative results, and in particular, students' resulting variations within self-efficacy scales.

The results of the current study revealed that there are statistically significant differences in NMLS and ILSES items on the posttest, administered following the intervention. Specifically, though the researcher assuming that intervention would improve students' new media literacy competencies, has obtained positive results; and yet several items of the scale demonstrated the negative ranks. As seen in the figure 5.1 below, positive results were observed within critical consuming media literacy dimension, whereas negative ranks were observed within Functional presuming media

literacy dimension. In this context, taking into account the New Media Literacy Scale, which is based on the theoretical model proposed by Chan et al. (2011), the critical media literacy dimension within NMLS, refers to the "abilities to analyze and judge media messages and understand them at various contextual levels; whereas functional media literacy dimension refers to the "competencies to operate media tools in order to access and create media messages and understand them at the textual level" (Koc & Barut, 2016, p. 835).
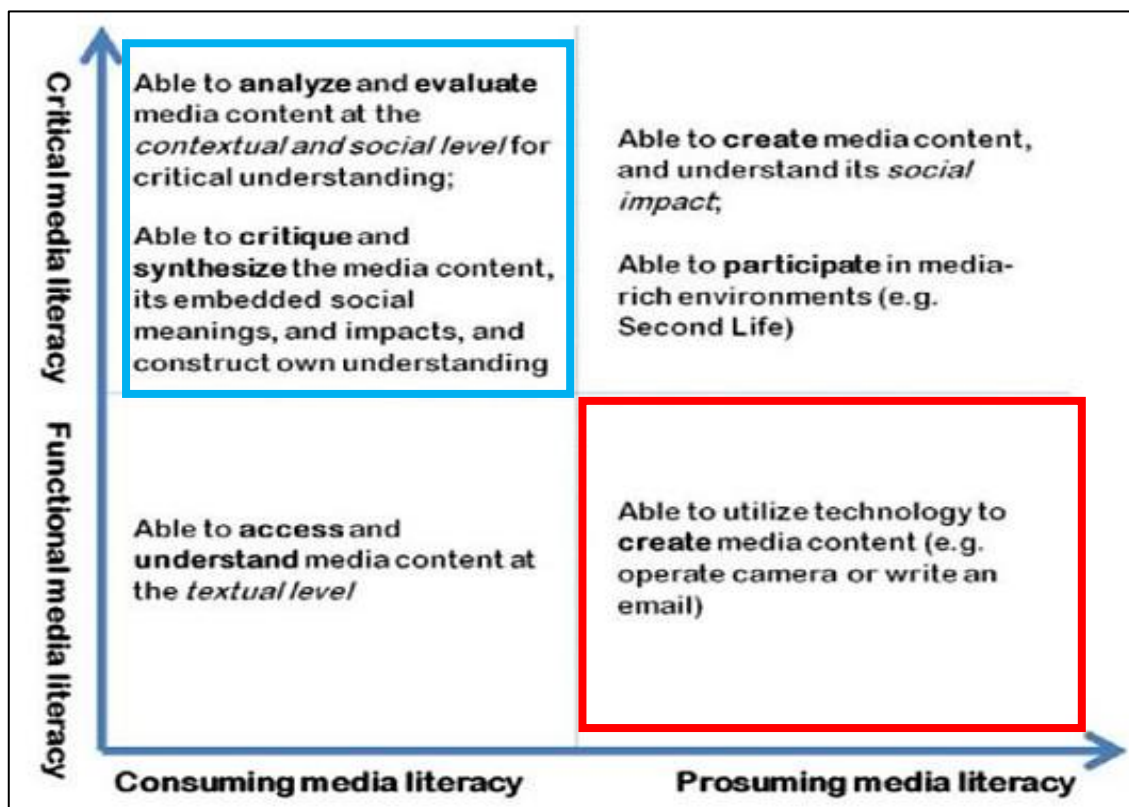
Figure 5.1 *Conceptual representation of new media literacy skills (Chen et al., 2011).*

Considering the finding as well as the figure above, three items within the NMLS, altogether indicating Functional Prosumption (FP) skills, have demonstrated negative ranks in the posttest. To explain the nature of the negative ranks, the researcher turned to qualitative data obtained within and after the intervention. Accordingly, after reviewing assessments, interviews, and student feedback, the researcher had provided brief explanations on the subject matter in the Findings chapter. Nevertheless, to clarify the point behind the negative ranks, it is important to note that the study focused on the critical

consumption of media content rather than 'prosumption', and thus, the researcher to a greater extent has focused on the consumption dimension within the new media literacy rather than functional presumption, highlighted in red. Moreover, considering that students were challenged to evaluate sociopolitical information online, or in other words, controversial topics within the new media landscape, online news and social media posts, negative ranks within the new media 'prosumption' component, e.g., ability to share news on social media platforms, is somewhat 'counterreaction', unforeseen byproduct, on behalf of the particular context and the focus of the study. Nevertheless, considering the negative ranks, future studies could focus and help prospective teachers to develop the skills in respect to 'functional presuming' media literacy dimension.

Results obtained by means of ILSES have demonstrated that the students do believe that they lack some basic information literacy skills that would enable them to (a) recognize errors in logic within the information; (b) synthesize newly gathered information with previous information, and even (c) interpret information on the library catalogue. The only item of the ILSES scale that revealed a statistically significant positive difference, is the item that implies that students are able to "paraphrase the information". In other words, following the online intervention, the majority of students have realized that they are inefficient in comprehending and applying new information, new knowledge in a new situation. The results obtained via ILSES are also critical since particular items revealed that the students, struggle to comprehend new information; and thus, prior to enhancing critical thinking, i.e., skills that demands a higher level of thinking, such as abilities to analyze, synthesize and evaluate new pieces of information, students need to master lower-level thinking skills.

All relevant results of the study will be discussed below under two titles: Students' Actual Performance and Students' self-efficacy beliefs' regarding new media.

5.2 Students' Actual Performance

Considering the argument that responses to declarative nature do not objectively assess competencies of the performance nature (Ptaszek, 2019), the researcher administering particular assessments, had an opportunity to evaluate students' performance based on authentic tasks. In this context, the researcher assessed students' new media literacy competency, both by means of self-efficacy scales and the COR

assessments at the same time. Accordingly, the researcher presented the results of the study, by comparing and contrasting data obtained by both methods of assessments.

Adapted COR assessments had been utilized for the study as formative assessments. Accordingly, online assessments had been utilized "for learning", that is to enhance and further students' relevant learning. Generally speaking, assessments proved to be effective for cultivating relevant competencies, that is, knowledge, strategies, and skill required to evaluate the reliability of any information found on the Internet.

Considering the findings, during the first two weeks, the COR assessments revealed that the students did lack the required digital and media literacy knowledge and skills to evaluate the reliability of online information. Accordingly, for the first two weeks, taking into account 'the COR' assessments, i.e., formative assessments, only one out of five students were able to effectively assess the reliability of online information. The number of students performing at "emerging" and "mastery" levels has increased, two and threefold for the consecutive weeks. That being said, a few students submitting feedback at the end of the study, have acknowledged that the "*inability to assess online information*", was the case. Particularly, students admitted that at the beginning of the study they did not know how, "*what and where to search*". Nevertheless, for the following weeks, students receiving online feedback for the assignments had improved relevant fact-checking strategies, digital and media literacy awareness; and accordingly, has demonstrated higher performance for the remaining assignments.

Reviewing students' responses to the assignments, the researcher has noticed that many students struggle to differentiate between facts and opinions, news and claims. In this context, OECD (2021) has also emphasized that the young generation struggles to differentiate between facts and opinions. Accordingly, a more comprehensive media literacy program should be introduced to enable and empower students with respect to media literacy (Erdem & Erişti, 2018).

In order to reinforce learning outcomes addressed in the study, and specifically emerging COR skills, the researcher had introduced two more assessments towards the end of the study. Thus, besides pre-planned five formative assessments, research presented students with two 'parallel' assessments. Those final assignments were designed to reveal the true extent of students' performance. Accordingly, the researcher had an opportunity to assess students' COR competencies toward the end of the learning process without "scaffolding", i.e., presenting immediate feedback. Final parallel

assessments, last two assignments have demonstrated true grasp of the students with respect to online reasoning and evaluation skills, and thus, the overall effect of online training. Based on adapted rubrics, results of the assessment revealed significant differences in students' performance, especially for two COR competencies, namely, the ability to assess "Who is behind Information?"; and "What is the Evidence?" for a particular claim.

Considering that the focus of the current study is to raise students' awareness on the subject of fake news by means of enhancing critical media literacy; and particularly, fostering "a major component of media literacy and that is critical thinking about a message (information or text) and its evaluation" (Ptaszek, 2019, p.2), the critical thinking and evaluation of online messages were considered as core (expected) learning outcomes for the current study. In other words, at the heart of media literacy education lays critical thinking and skills required to evaluate a message, and thus these two interrelated components were considered fundamental for particular media literacy education program; complimentary media literacy competencies related to the production and creation of media messages were rather not taken into account.

Accordingly, since cultivating basic competencies of media literacy, that is critical thinking and skills of evaluation, is not a simple task that could be tackled through a rather short online intervention, the researcher had focused only on these two fundamental competencies. Thus, media literacy competencies related to the creation and prosumption of media messages were considered secondary.

5.3 Students' self-efficacy

Considering the findings obtained by means of scales, the New Media Literacy self-efficacy scale, validated the findings obtained by means of final assessments. That is, based on subjects' self-efficacy beliefs, students have significantly improved in a number of relevant New Media Literacy skills such as the ability to "determine whether or not media contents have commercial messages", "assess media in terms of credibility, reliability, objectivity, and currency", "make a contribution to media by reviewing current matters from different perspectives (social, economic, ideological, etc.)".

In this context, students' perceived abilities to "determine whether or not media contents have commercial messages" and "assess media in terms of credibility, reliability, objectivity, and currency" had been regarded by the researcher as the target learning

outcomes of the study. In other words, students' self-efficacy with respect to these two abilities has increased significantly following the intervention. Thus, based on Bandura's self-efficacy theory (1995), students would likely assess new "media in terms of credibility, reliability, objectivity, and currency" rather than avoiding a particular task.

Furthermore, the scale revealed that students improved self-efficacy in respect to basic new media literacy knowledge on "how to use searching tools to get the information needed in the media" and "realize explicit and implicit media messages".

On the other hand, the NMLS scale revealed that students perceived self-efficacy related to Functional Prosumer (FP) abilities has significantly decreased. The reason behind negative ranks might be based on the fact that self-efficacy beliefs are "domain sensitive" (Kurbanoglu et al., 2006, p. 732). Accordingly, the negative results from students' perceived lack of ability to "share digital media contents and messages on the Internet" stem from the context of the current intervention. That is for the researcher addressed students to assess sociopolitical information shared online, those filling the scale following the intervention, might have taken into account these kinds of messages; and thus, decided to lessen perceived self-efficacy regarding that item. On the other hand, two other items of the NMLS indicating abilities of the Functional Prosumer (FP), have also demonstrated a significant decrease.

Nevertheless, based on the above-mentioned focus of the study, and that is, enhancing basic media literacy skills, functional prosumption skills, were out of the learning objectives. One possible explanation for the negative ranks might be based on the fact that students realized the need to develop these abilities and thus, the current intervention served as a catalyst that helped them realize that shortfall.

5.4 Discussion and Implications

The current study aimed at promoting teacher education students' digital literacy skills and in particular fact-checking skills within media literacy intervention delivered online. Taking into account the questions addressed within the study, the researcher designed an asynchronous online course, intervention, comprised of learning materials delivered via Canvas LMS, and authentic assessments delivered via Google Forms. The course of instruction that has been delivered online amid the Covid-19 pandemic, in this context, emphasize a critical role of digital literacy, since inside the 'infodemic' of

disinformation, (Buchanan, 2020), 'immunization', i.e., enhancing digital literacy skills, and in particular, fact-checking skills, could and should have helped student teachers to stay immune against viral misinformation, disinformation that spread on social media, a.k.a. fake news.

The uniqueness behind the particular intervention, in the context of Turkey, lies in the fact that the researcher adopted a different kind of approach, a 'fresh' instruction for digital literacy delivered within media literacy intervention. That is, the researcher introduced a strategy promoted by the researchers at the Stanford History Education Group (SHEG), known as lateral reading within the authentic assessments. The strategy has been refined by the researchers for classroom practices and adopted from professional fact-checkers, on the grounds of several studies that demonstrate that existing materials aiming at promoting digital literacy, including the widely used 'C.R.A.P. test', which provides criteria for evaluating a source's credibility, found to be not effective as the 'lateral reading' strategy for online sources; and thus former methods are rather outdated when it comes to evaluation of online sources (Breakstone et al., 2019). Based on that argument, the researcher, adopting the COR assessments for formative feedback and promoting the 'fact-checking' strategy within the current study, for effective learning to occur, has tailored the original assessments in order to make the assessments authentic, so that the new assessments could motivate students and foster their individual learning.

Assessments utilized within the study have been delivered online by means of Google Forms and used for formative purposes only; that is, to promote learning. Here, it is important to note that though the researcher meant to utilize original COR assessments, for the sociopolitical landscape of Turkey differs from the USA, the original assessments could not be adapted as it is, i.e., as summative assessments. For that reason, the researcher has designed analogous assessments based on the original assessments. In this context, adapted assessments used within the study were demonstrated to educators for face validity. That being said, while designing the formative assessments, the researcher tried to make the tasks as real as possible, so that the learners could transfer the skills they learned within the course to a real-life. That is, the researcher attempted to simulate the task and expected the performance standard that students might have to conduct in the future. In other words, the researcher has devised authentic assessments based on the COR assessments. In this context, to devise authentic assessments, one could address the step-by-step model proposed by Villarroel et al. (2018). Nevertheless, to sum

up, the researcher has adopted the authentic assessments, and yet the assessments are rather conceptual replications of the original Civic Online Reasoning (COR) curriculum assessments.

Considering the results of the intervention, materials used within the study, i.e., presentation on media literacy that included novel subjects related to fake news, and instilling particular digital literacy skills, i.e., fact-checking strategies, to a certain extent proved to be effective. That is, online instruction, overall, has rather enhanced students' critical media consumption and abilities to distinguish between credible and untrustworthy online sources. Hence, adopting similar materials and methods to promote critical media literacy, including digital literacy, could be effective considering future studies.

The current study might be considered unique in the context of Turkey, since the researcher, exploring the fake news phenomenon, besides promoting lateral reading strategy within the assessments, has integrated relevant presentations related to the subject matter within broad media and information literacy curriculum framework. Particularly, the researcher has highlighted the subjects related to new media rather than legacy media in the first place, and thus has strived to deliver related presentations on types of mis- and disinformation with examples (see Appendix), alongside presentations regarding common cognitive biases (reasoning errors), filter bubbles, echo chambers, search algorithms, etc.

In light of the above argument, Polizzi (2020) scrutinizing what digital literacy as a concept entail, confirms that functional as well as critical skills and knowledge are fundamental aspects of digital literacy. That is, relevant skills and knowledge on how to engage with online information and evaluate online content, are seen as fundamental for digital literacy. In this respect, the author points out that "the ability to evaluate online content", aforethought as a learning outcome for the current study, is a complex endeavor, for the ability requires individuals not only to " reflect on the nature and origin of information, contextual knowledge, and the use of multiple sources" but also consider "functional and critical digital skills and knowledge about the internet and the digital environment" (Polizzi, 2020, p. 1). Based on the argument, it is transparent that the researcher, as a course instructor, attempted to facilitate relevant literacy knowledge and skills with respect to digital literacy, and fact-checking skills in particular. That is, the subjects introduced within the intervention, were carefully decided on so that MIL

presentations and the 'COR' practice, could promote relevant MIL knowledge alongside with relevant set of skills, that is, the COR skills, aka digital literacy skills. Nevertheless, based on the findings, one could argue that though students have demonstrated positive outcomes within the new media literacy critical consumption dimension, the negative ranks behind functional prosumption media literacy dimension, tell us that the students are in need to acquire competencies that would enable them to "operate media tools in order to access and create media messages and understand them at the textual level" (Koc & Barut, 2016, p. 835). Though negative ranks within that dimension might stem from the context and focus of the study, i.e., sociopolitical situation and fake news, as the researcher has mentioned in the findings section (e.g., students' reluctance at sharing digital media contents and messages on the Internet); or even, due to the fact that the society is "very polarized" alongside the "news media" (Yanatma, 2018, p.20); the researcher, regardless of the factors, suggests focusing on that 'missed' dimension as well, while preparing learning materials for the future studies on media and digital literacy.

The current study could shed light on the practical learning materials, considering the MIL, and effective methods on how to immune future teachers against misinformation, considering digital literacy. That is, the study, to a certain extent, has demonstrated that even a short, online instruction on media and digital literacy, delivered asynchronously, can bear fruitful results. In this context, the research article by Breakstone et al. (2021, p .1), correspondingly, reach a conclusion that online intervention that has been delivered asynchronously during the pandemic, within a course provided at a college level, instructing "on how to vet websites using fact-checkers strategies"; and in particular, lateral reading, demonstrated to be effective, since "students improved significantly from pretest to posttest, engaging in lateral reading more often post-intervention". Likewise, a study by Nygren and Guath (2021, p.2), that assess how effectively 2.216 Swedish upper secondary school students are able to evaluate online sources, that is, students' performance with respect to the COR competencies, namely sourcing, evaluating evidence, and corroborating digital news, confirm results of the previous researches on civic online reasoning that highlight the fact that the "young people struggle to determine credibility in digital environments". In other words, the researchers confirm the previous studies related to COR, i.e., those studies that emphasize that determining the reliability of the digital news is rather a complex task for students of all ages. Moreover, the same study, besides measuring students' COR skills, investigates

students' COR performance in relation to background variables, attitudes, and self-rated abilities. The findings reveal that "valuing credible news, studying at the Natural Science program, and speaking Swedish at home", for the students enrolled within the study, relates to better COR performance, and thus, based on these findings, Nygren and Guath (2021, p.8), argue that the 'digital divide', referred to as 'divide of digital civic literacy' by the researchers, affect the students' abilities to determine the credibility of the news; i.e., correlate with individuals' COR performance. Finally, a study by Breakstone et al. (2021), called Students' Civic Online Reasoning: A National Portrait", by assessing 3.446 high school students studying in the USA, seeks to find the answer to the question to what extent students are able to discern quality information from fake online. The findings of the study, reveal that the students, responding to six constructed-response tasks, "struggled on all of the tasks" (Breakstone et al., 2021, p. 505). Based on the findings, the researchers call for urgent action and in particular, suggest designing a curriculum or program that would enhance students' abilities to discern the quality of information, since the future of democracy depends on individuals' abilities to assess the credibility of online news.

In light of the findings of the study, the researcher advocates for analogous interventions, or even online courses, namely Information and Digital Literacy, to be introduced within the education faculties as well as for university students (see a representation of relevant online course provided via Coursera in the Appendices). Similarly, the school curriculums should be revised and updated, for digital literacy, as a key literacy in the 21st century (OECD, 2021), ought to be established as a single subject or at least promoted within cross-curricular teaching.

To fight post-truth politics and prevent individuals from falling for fake news within an environment where facts are rather in short supply and opinions prevail, it is vital that academia is able to prepare well-witted, enlightened student teachers, since the future generations, as Mustafa Kemal Ataturk emphasizes, will be the fruits of those teachers. That is, to fight the so-called truth, that has no basis, teacher educators should be able to prepare ideal, exemplary teachers; cultivate those open-minded individuals that possess critical thinking skills; 'export' enlightened individuals who are able to distinguish between facts and opinions; nurture those prospective teachers that are able to cultivate critical thinking skills in their students and not the other way around.

Nowadays, humanity lives in a postmodern world, post-truth era, and to discern the fakeness behind what is shown, i.e., media representations, one should be able to question every source, every text, every image, assess political rhetoric, or in other words, one should be able to look behind the facade, to reach that real, factual truth. Enhancing in students the relevant knowledge and skills on how to engage with online sources and evaluate digital content, is on the shoulders of the teachers, and thus, promoting digital literacy, media literacy, and information literacy within teacher education faculties, by all means, is essential, or rather pivotal for society, democracy, and for progress.

5.5 Suggestions

In this section, the researcher presents suggestions regarding the study.

- In the current study, the self-efficacy of the subjects was examined using a single group pretest-posttest model. Hence, the researcher suggests conducting similar interventions using different quasi-experimental designs.

- The current study involved a group of students studying in the same department, and hence, future interventions can be conducted by recruiting students studying in the faculty of communication sciences and students enrolled in different teacher education programs.

- The current study had been conducted during the Covid pandemic; thus, the intervention had been administered online. Future studies should consider blended learning since cultivating critical thinking skills require students' engagement and motivation. Likewise, since the study followed asynchronous distance learning, a particular delivery mode might not have been as effective as if the intervention were to be delivered in face-to-face learning, blended learning, or even synchronous distance learning.

- The study was unique in the context of Turkey since the researcher adopted a new instructional approach promoted by the SHEG that aims to enhance students' abilities to assess digital content; a strategy known as lateral reading. Here, the adapted instructional approach, suggested assessments along with the rubrics, proved to be promising for future studies since students' abilities to "read laterally" cultivated throughout the study appeared to be improved. Further studies could improve upon particular instructional approaches and assessments. Moreover, future studies that aim to further students' abilities to evaluate digital content, should consider developing enhanced, authentic assessments. Likewise, different learning environments, e.g., in-class learning; a learning environment where instructors could introduce students to the video lessons on the subject that are available on the YouTube channel named *"Crash Course; Navigating Digital Information"*, should be considered. In this context, akin video lessons could be created, or even that course could be translated to Turkish, or relevant subtitles to be added so that the students who cannot watch those videos in English could watch them in their native language.

- COR Curriculum lessons and assessments are available for middle school, high school, and college-level students, and thus, relevant lessons, rubrics, and assessments can be adapted for further studies accordingly. In this context, middle school and high school assessments are more engaging and thought-provoking for the assessments are more relevant to digital literacy skills. Moreover, the COR assessments can be used both as "assessments of learning" as well as "assessments for learning". In the current study, the researcher adapted assessment for promoting learning, i.e., utilized akin assessments within the study as formative assessments. Further studies could adapt the COR assessments as summative assessments as well.

- The MIL Curriculum for Teachers has been used within the study since the researcher had to deliver interrelated subjects, i.e., learning materials related to media literacy, information literacy, and digital literacy. The MIL framework, for being comprehensive and flexible, enabled the researcher to deliver all-inclusive instructional materials online based on the curriculum modules, as well as considering specific learning objectives of the study. As a result, the researcher suggests that the MIL Curriculum for Teachers promoted by UNESCO would be adapted and modified for further analogous studies, as well.

- Fake News, as an extension of a broader phenomenon known as post-truth, is impracticable to tackle without interdisciplinary efforts. Accordingly, an inclusive, collaborative approach should be embraced to tackle the issue with (a) pros who would introduce to students' basic cognitive bias, and thus the reasons why individuals are predisposed to believe fake news; (b) media literacy educators who would introduce what is news, a long history of disinformation and why ethical journalism is important (media literacy subjects); and last but not least, (c) CEIT educators who would explain how the Internet and social media algorithms facilitate fake news to spread, and how to navigate digital information, how to evaluate online content, and (d) philosophy teachers, who would encourage students to inquiry into subjects like ethics, logic, etc.

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APPENDIX-1. Anadolu University Ethics Committee Approval

ANADOLU ÜNİVERSİTESİ
SOSYAL VE BEŞERÎ BİLİMLER BİLİMSEL ARAŞTIRMA VE YAYIN ETİĞİ KURULU
KARAR BELGESİ

ÇALIŞMANIN TÜRÜ:	Doktora Tez Çalışması
KONU:	Eğitim Bilimleri
BAŞLIK	Dijital Okuryazarlık: Öğretmen Adaylarının Sosyal Medya Aracılığıyla Yayılan Sahte Haberler Konusunda Farkındalığı Arttırma
	Digital Literacy: Raising Prospective Teachers' Awarenes of the Fake News Spreading through the Social Media
PROJE/TEZ YÜRÜTÜCÜSÜ:	Prof. Dr. Hatice Ferhan ODABAŞI
TEZ YAZARI:	Hanmyrat SARIYEV
ALT KOMİSYON GÖRÜŞÜ:	.
KARAR:	Olumlu
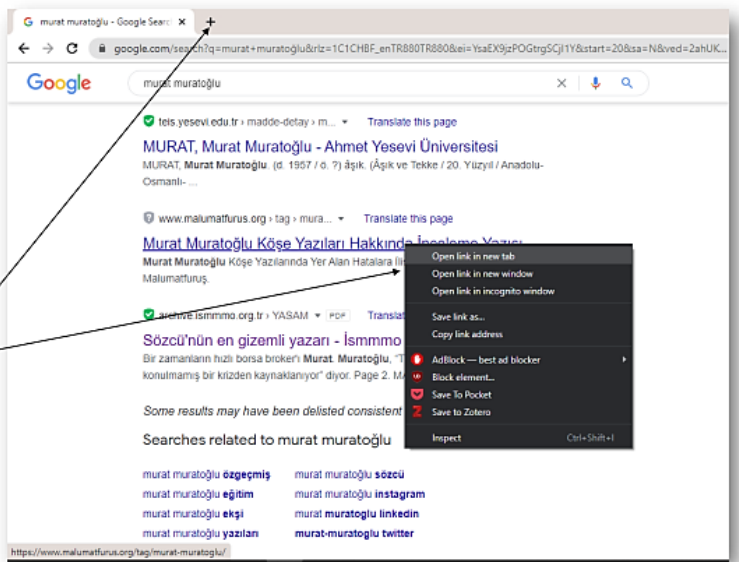
APPENDIX-2. Permissions to Use Scales. 1. New Media Literacy Scale (NMLS).

2. Information Literacy Self-Efficacy Scale (ILSES)

Dear Hanmyrat SARIYEV;

I accept you to use my the "New Media Literacy Scale", which I am a developer and author of, in your academic research. You can find detailed information about the scale in the attached file.

Ölçeği kullanabilirsiniz. Türkçesi ilişikte.

Başarılar.

Hacettepe Üniversitesi
Bilgi ve Belge Yönetimi Bölümü

Hacettepe University
Department of Information Management

APPENDIX-3. Course Instructor Feedback. Samples.

APPENDIX-4. Instructor's Feedback. Introducing "Lateral Reading"

APPENDIX-5. Presentation Samples. Introducing "Fake News "

1.UYDURMA (FABRICATED CONTENT)

- First Draft'a göre *"Üretilen yeni içeriğin tamamen yanlış olması, kandırmak ve hasar vermek için üretilmesi"*
- Herhangi bir gerçekliği olmayan, **%100 üretilmiş, uydurulmuş** ve **asılsız** bilgi.
- Sınıflandırma içindeki **en tehlikeli içerik türü**. Ancak "günümüz" iletişim teknolojileri sayesinde "gerçeğinin" en hızlı ve kolay ortaya çıkarılabildiği bilgi.
- Türkçe'de *uydurma* TDK'ya göre *"Şişirme haber"* olarak tanımlansa da *"Gerçek dışı, uydurulmuş olan, yalan, sahte, asılsız, düzme"* tanımının yanlış bilgiyi kastetmek açısından daha isabetli olacağını düşünüyoruz.
- Tanımın "şişirme haber" kullanımının "abartı" ile yakından ilişkili olacağı ve her zaman yanlış bilgi içermeyebileceği hatırlatarak *uydurma kavramını "tamamı üretilmiş, herhangi bir gerçeklik payı taşımayan içerikler"* ile sınırlı tutalım.

APPENDIX-6. Presentation Samples. Fact-Checking Sites. Conspiracy Theories site

APPENDIX-7. Illustrations for the Relevant Asynchronous Courses

VERIFIED
CERTIFICATE of ACHIEVEMENT

MITx

This is to certify that

Hanmyrat SARIYEV

successfully completed and received a passing grade in

0.504x: Sorting Truth From Fiction: Civic Online Reasoning

a course of study offered by MITx, an online learning initiative of the Massachusetts Institute of Technology.

Executive Director
Massach

Dean for Digital Learning
Massachusetts Institute of Technology

edX VERIFIED CERTIFICATE
Issued

VALID CERTIFICATE ID

THE UNIVERSITY OF
SYDNEY

COURSE
CERTIFICATE

HANMYRAT SARIYEV

has successfully completed

Information & Digital Literacy for University Success

an online non-credit course authorized by The University of Sydney and offered through Coursera

EDUCATION FOR EVERYONE
coursera
COURSE CERTIFICATE

Kath
Deputy
University of Sydney Centre for English Teaching

Coursera has confirmed the identity of this individual and their participation in the course.

RÉSUMÉ

Name Surname: Hanmyrat SARIYEV

Foreign Language:

Place and Year of Birth:

Email:

Education and Professional Background:

Publications and/or Scientific/Artistic Activities: