

Digital Media Literacy in the Age of Mis/Disinformation: The Case of Moroccan University Students

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Abstract

This paper set out to explore online users' perceptions, attitudes, and practices towards mis/disinformation on social networking sites and investigate how they engage with, identify, and evaluate information disorder on social networking sites. The correlation study provides empirical insights into the complex relationship between digital media literacy and online information processing. To this end, a web-based survey was administered to gauge Moroccan undergraduate students' digital media literacy skills, particularly in what regards their ability to identify and evaluate the credibility of information online. The data obtained are consistent with the hypothesis guiding this research that there is a significant relationship between digital media literacy skills (DMLS) and students' ability to identify information disorder online (IDO). Based on the empirical findings, important implications and strategies for higher education institutions are addressed to help students become more digitally media literate consumers of information.

Key Words

Social Media; Undergraduate Students; Mis/disinformation; Digital Media Literacy

I. Introduction

a. Background to the Study

The 21st century is a media-saturated, technology dependent, and globally connected world. Today's digitized world has made it easier than ever for content creation and distribution. The evolving and complex digital landscape has exposed individuals to a vast array of unfiltered information available in multiple formats (Vosoughi, Roy, & Aral, 2018). Social media have become breeding grounds for large-scale information sharing. As social media become embedded in the fabric of academia, they are also becoming a site of contestation. In the past few years, scholarly attention has been directed to understanding the dynamics behind false news circulation on social networks. Unsubstantiated information flourishes in the wide-open media of the digital age, spurring concerns about its role in influencing public opinion (Anderson & Raine, 2017).

Today's information environment is rife with fake news stories. In times of crisis, as is the case with COVID-19 pandemic, individuals become increasingly dependent on electronic sources for instant updates and news. The unregulated nature of the internet has contributed to large masses of fake news stories being created and circulated online causing massive confusion among people. The propagation of online mis/disinformation has generated extraordinary interest across several disciplines, signaling a growing concern that the prevalence of falsehoods heightens political polarization, decreases trust in public institutions, and undermines democracy (Allen, Howland, & Mobius, 2020). Although none of these phenomena are new, they have taken new dimensions recently with the availability, accessibility and utilization of Information and Communication Technology (ICT) for information seeking and sharing.

The rapidly changing information landscape, the growing distrust in mainstream news institutions, and decline of traditional news sources have all contributed to the increasing circulation of mis/disinformation. These dynamics testify to the mounting challenges facing online users to assess the credibility of information. Today's increasingly polarized political climate raises concerns about the plethora of false news stories circulating online as well as individuals' ability to assess the quality of news reporting (Figueira & Oliveira, 2017). A growing public mistrust in the media coupled with a lack of shared understanding of what constitutes a reliable news source is a testament to the declining trust and confidence in the information people receive from online news sources (Zimdars & McLeod, 2020).

b. Problem Statement

Today's technology dependent users are inundated with information from an ever-expanding array of social media sources. University students — as heavy social media users — are faced with a multitude of research-based tasks in order to identify, locate, and synthesize various sources of information in order to meet their information needs. The increasing usage of terms like "alternative facts" and "fake news" in the popular discourse highlights how much of the information processed by students is of questionable quality (Hodgin, & Kahne, 2018). With the rapid propagation of unsubstantiated news, credibility comes into question and young adults are left on their own to determine which stories are credible and which are not.

University students seem unprepared to effectively navigate the online information environment. Undergraduate students seem to lack important fact-checking skills, which may lead them to accept information at face value. The deficit in digital media literacy has been identified as a critical factor explaining widespread belief in online misinformation (Brisola & Doyle, 2019). Little rigorous evidence exists on the relationship between digital media literacy and students' ability to discern low- from high-quality news content online.

In this post-truth era of alternative facts, students must be in a position to identify valid research for scholarly work as opposed to searching for unsubstantiated claims which confirm predetermined

personal viewpoints. As mis/disinformation permeates Web 2.0 technologies, students need to acquire the necessary critical media literacy skills to evaluate online content. As heavy consumers of social media, young people are particularly vulnerable to propaganda, misinformation, and fake news. The substantial rise of fake news as propaganda makes it critical that students have the skills needed to identify truth and discern bias. With low barriers to online publication, the ability to obtain reliable information is conditioned by the development of self-directed learning (Evanson & Sponsel, 2019).

Research on media and information literacy has focused more on the examination of media practices than on the assessment of media and information literacy skills. Despite the centrality of digital and media literacy in formal education, limited empirical research has been conducted to investigate users' search behavior on social networking sites. In spite of the central importance of critically evaluating online information, its assessment in higher education is still an emerging field of study.

c. The Purpose, Significance, and Scope of the Study

With the abundance and ubiquity of user-generated content, it has become vitally important to understand how users react to information circulating online and where they seek out information from (Ferreira & Borges, 2020). This study was prompted by the ongoing discourse on the rapidly changing media landscape and the increasing wide range of possibilities to disseminate online content, underscoring the need for a more comprehensive understanding of the dynamics of information processing. Critically analyzing and evaluating digitally represented information is integral to cope with the oversupply of unstructured information. Based on this premise, the overarching aim of this paper was to explore online users' information consumption patterns and investigate how they engage with, identify, and evaluate unsubstantiated information on social networking sites. The study provides empirical insights into the complex relationship between digital media literacy and online information processing. This research is situated within the larger body of media literacy education research.

As a demographic group, university students constitute a substantial proportion of online content consumers and producers (Share, Tatevik, & Lopez, 2020). Against this background, this study set out to examine Moroccan undergraduates' news consumption patterns and behaviors, particularly their perceptions of what constitutes mis/disinformation, a subject which remains relatively underdeveloped in scholarship, especially in the MENA region. The paper's most significant contribution is the understanding it provides about the information practices and strategies students use to navigate the barrage of information they receive. The paper provides further insights on what information skills and behaviors college students employ and exhibit when it comes to news consumption—and whether the media literacy instruction in higher education transfers to the identification of fake news stories.

d. The Research Questions and Hypothesis

To explore the relationship between Moroccan undergraduate students' digital media literacy and how they evaluate information disorder on social networking sites, the following two primary research questions guided this correlational study:

RQ1: How do university students interact with and experience fake news when using social media networks?

RQ2: Is there a correlation between students' digital media literacy skills and their ability to identify and evaluate information disorder online?

As for the hypothesis guiding this study, it is hypothesized that there is a significant relationship between digital media literacy skills (DMLS) and students' ability to identify information disorder online (IDO).

II. Literature Review and Theoretical Framework

The study closely examined existing research to establish a foundational understanding of the dynamics governing information consumption in the era of fake news. The research literature on fake news, misinformation, and disinformation is vast and wide-ranging. Despite being relatively a new area of study, the scholarship literature on online fake news has generated useful insights and important findings that are of practical implications for digital media literacy education. Information literacy, digital literacy, and digital media literacy can be placed in the broader field of media competence and communication (McGrew et al., 2019). The reviewed literature identifies multiple motivations underlying individuals' drive to seek and share information on social media. A diverse set of cognitive, social, and algorithmic biases contribute to individuals' vulnerability to unsupported information.

a. Overview and Background to Fake news

The paper provides an in-depth overview of the current state of fake news in the literature. Although this contested concept has been a core focus of scholarly research for years now, it has taken a whole new meaning, dimension, and renewed emphasis recently. Fake news is a manifestation of broader issues in today's information-saturated world. While fake news is not without historical precedent, the online information ecosystem provides a fertile ground for sowing the seeds of misinformation. The term has roots back to the 1890s; a period marked by heightened sensationalism yellow journalism, and increased distrust in American mainstream media (Cooke, 2018). Newer definitions have evolved in recent years to encompass the challenges posed by new communication technologies (Kalsnes, 2018).

There is a significant amount of ambiguity surrounding the precise delineation between fake news on the one hand, and, disinformation, misinformation, and propaganda on the other hand. While misinformation refers to the unintentional sharing of false or inaccurate information, disinformation is the "deliberate creation and sharing of information known to be false" (Mele et al., 2017). To achieve greater visibility, purveyors of disinformation have at their disposal an arsenal of methods, such as "feeding inaccurate quotes or stories to intermediaries, or knowingly amplifying biased or misleading information" (Wardle & Derakhshan, 2017).

Fake news has emerged against a backdrop of ongoing societal changes, such as the increasing distrust of public institutions and news media as well as the continuing decline of the professional news media (Nicolaou & Giles, 2017). It has historically been constructed as a cause or symptom of a wider decline in public trust in established institutions. According to Allcot and Gentzkow, (2017, p. 215), the declining trust in mainstream media "could be both a cause and a consequence of fake news gaining more traction."

Google searches for 'fake news' surged in the aftermath of the 2016 American elections, a period marked by rising political polarization and an increasing reliance on social media which resulted in loads of misinformation circulating online (Albright, 2016). Since then, fake news has become an omnipresent idiom in American discourse. Collins Dictionary named fake news as its word of the year for 2016, defining it as "[f]alse, often sensational, information disseminated under the guise of news" (bbc, 2017). In the aftermath of the 2016 American election, the Pew Research Center

study found that 64% of American adults believed fabricated news stories cause mass confusion about the basic facts of current issues and events and 23% reported they had shared fabricated political stories unintentionally (cited in Anderson & Lee, 2017).

More recently, the outbreak of covid 19 pandemic has generated mis/disinformation pandemic, commonly referred to as "infodemic." The term refers to the exponential increase in the volume of information about a given topic in a short space of time (Ferreira, 2020). It refers not only to a deluge of information, but also to the fact that the information could not be verified and much of it is probably not accurate (Gamble et al., 2018). The infodemic adds to public confusion about who and what information sources to trust, inciting mass panic due to unverified stories and exaggerated claims. Unsubstantiated information proliferates whenever people are unwilling or unable to take the time to look into the facts. By combining speed, volume of information, and user-oriented targeting, fake news gains large scale space and momentum (Brisola & Doyle, 2019).

b. Infodemic in the Post-Truth Era

We are living in a post-truth world where fake news, half-truths and alternative facts are increasingly commonplace (Cooke, 2017). The sheer speed and volume at which information is produced and consumed make the lines between news and entertainment, fact and opinion harder to discern. In today's online environment, news stories from reputable sources can be displayed side-by-side with opinions and sensationalism (Figueira & Oliveira, 2017). The abundance and ubiquity of user-generated content has exposed the fragility of the media landscape, particularly its defensive immunity to curb the rise of fake news and disinformation.

The digital information revolution has fundamentally disrupted the existing media and news industry. Besides subverting traditional hierarchical models of information flow, it raised widespread concerns over the quality of the information in the post-truth era (Douai, 2019). In late 2016, Oxford Dictionaries nominated "post-truth" as the word of the year, defining it as "relating to or denoting circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief" (Oxford Dictionaries, 2016). A post-truth society is one in which subjective viewpoints and unverified assumptions rival valid scientific facts. In a time when truth is networked by peers, there is a counterfact for every fact, adding to the confusion of navigating the sea of information (Anderson & Raine, 2017).

With the expansion and complexity of online media, an overarching sense of uncertainty prevails with people likely to value more familiar facts than reliable ones (Barthel, Mitchell, & Holcomb, 2016). A growing public distrust in news media along with a lack of shared understanding about critical news literacy undermine individuals' confidence in the information they receive from news outlets (Bonnet & Rosenbaum, 2020). The current climate of uncertainty about the reliability and veracity of news in times of crisis is further exacerbated by a move away from traditional mainstream news media.

The decreasing level of trust in established institutions and sources of information is a hallmark of post-truth sentiments (Kavanagh & Rich, 2018). The post-truth world is a highly polarized and partisan environment in which factual information is swayed by subjective and biased viewpoints. Scientific reasoning is scarified in favor of whatever information suits one's needs or aligns with their beliefs. This has been evident during the COVID-19 global pandemic which unleashed a tsunami of information referred to by the World Health Organization as *infodemic*. The pandemic is exemplary of how accurate scientific information is interpreted differently depending on personal, political, or ideological convictions and affiliations (Ferreira, 2020).

The ease and speed with which news can be received and reposted is phenomenal. In the midst of growing digitalization, facts become subservient to emotional appeal (Cooke, 2017). This is further

exacerbated by the formation of filter bubbles and personalized web services that limit users' exposure to alternative viewpoints, thus creating an intellectual isolation that constantly reinforces their preconceptions (Pariser, 2016).

c. The Persistence of False Information Online

A complex interplay between psychological, cognitive, social, and algorithmic biases exacerbated by the increasing dependence on online social networks contributes to individuals' vulnerability to fake news. The persistence of false information in today's society is believed to be primarily driven by digitally mediated communication. Efforts have been made to address fake news spread, particularly the development and application of fact-checking mechanisms by social media companies. While these efforts are commendable, they are not matching the fast pace of technology development and the large amount of fake news being published online (Ting & Song, 2017). The amplification of fake news through social bots exceeds our fact-checking capacity to process the vast amount of information received (Meng & Johar, 2017). The algorithms used by search engines, websites and social media tend to create filter bubbles and echo chambers, providing breeding grounds for false information to propagate (Pariser, 2011).

Psychological Biases

From a psychological perspective, there are individual-level cognitive and socio-psychological factors underlying people's perception of and belief in false information (Ting & Song, 2017). Research in the field of information processing theory makes a distinction between systematic and heuristic models of information processing (Chaiken, Giner, & Chen, 1996). In the former, individuals exert significant cognitive effort, scrutinizing all the relevant information in an attempt to comprehend and evaluate a message's truthfulness, and in the latter, they rely on cognitive shortcuts, past experiences to quickly assess the message content.

When confronted with information abundance on social media, individuals tend to rely on heuristics due in part to lack of resources to process the deluge of information thoroughly and objectively (Swire & Ecker, 2017). Rather than interpreting information in a rational, neutral and objective manner, individuals tend to succumb to their own biases when processing information they encounter. As a result, people have a tendency to naturally and uncritically seek out information that confirms their existing belief while dismiss counter-attitudinal information irrespective of its truthfulness (Flanagin & Medders, 2010). These psychological biases can undermine an individual's ability to look at a range of issues from diverse viewpoints, especially when it comes to politicized topics (Lodge & Taber, 2005).

There is a growing body of literature investigating the link between pre-existing worldviews and belief in new information. Humans are biased information processors who absorb information differently depending on how it relates to their previously held beliefs (Flaxman, Goel, Rao, 2016). They are naturally more predisposed to assess new information in terms of its logical compatibility with their preexisting beliefs. This is known as *confirmation bias* – a psychological phenomenon that helps explain why individuals tend to accept at face value information that confirms their preconceived notions and overlooks information that refutes their beliefs (Ting & Song, 2017). Our understanding of the world is a product of our personal experiences – we perceive events and interpret information in a way that confirms our beliefs and seek out evidence that matches our beliefs (Flaxman, Goel, & Rao, 2016).

With the rise of the Internet and digital networks, fake news has become increasingly personalized and highly responsive to user behavior in a way that reinforces individuals' existing world views (Lodge & Taber, 2005). Increased and heavy reliance on cognitive shortcuts to process the multitude of information encountered online makes users susceptible to their biases. This tendency

is magnified in the presence of an emotionally driven narrative as is often the case with sensational news stories. This bandwagon effect is exacerbated by the ease of sharing that is created by the internet through social media (Anderson & Rainie, 2019).

Humans are prone to a variety of unconscious psychological biases. Psychologists have been gathering evidence about the underlying drivers behind human decision-making for decades. As more humans tend to make decisions based on emotions, a myriad of non-rational factors are at play. Confirmation bias – as a coping mechanism to make rapid decisions – alleviates the discomfort and mental effort arising from the presence of contradictory evidence (Fazio, Brashier, Payne & Marsh, 2015). This cognitive process – known as cognitive dissonance – occurs when newly acquired information conflicts with pre-existing understandings, causing mental discomfort (Cooper, 2007). According to Festinger's (1957) theory of cognitive dissonance, there is a tendency for individuals to seek consistency among their cognitions by avoiding, ignoring or devaluing information that contradicts their preexisting beliefs. To minimize dissonance, individuals might choose to engage in motivated reasoning – commonly defined as reasoning driven by the motivation to reach conclusions congenial to one's self-defining values and group identity (Anderson & Rainie, 2019).

While confirmation bias refers to the implicit tendency to accept evidence that coincides with our preexisting beliefs and reject evidence that contradicts with them, motivated reasoning refers to the tendency to readily accept new information that aligns with our worldview and critically analyze that which does not. The motivation for people to engage in motivated reasoning is to safeguard self-identity and group identity, especially when they come into direct contact with counter-evidence (Fazio et al., 2015). That being said, the underlying impetus behind these biases is the subconscious impulse to minimize cognitive dissonance (Kunda, 1990). To preserve group identity and membership, individuals are motivated to defend their beliefs in the face of counter-evidence. This helps explain why some people are more prone to believing false information that others might overlook (Flynn, Nyhan & Reifler, 2017).

The Mechanics of Belief

While confirmation bias and motivated reasoning account for why individuals come to believe false information, they do not explain why attempts to debunk false claims sometimes fail. The underlying mechanics behind how humans believe imply that the internalization of false information may automatically lead to an acceptance of it as true, and that it requires substantial correction to rebut the falsehood (Ting & Song, 2017).

The persistence of false beliefs may also be attributed to a common phenomenon known as belief perseverance, defined as the tendency for individuals to defend the beliefs they currently hold and subconsciously weigh evidence that supports those beliefs more heavily (Nickerson, 1998). Accordingly, people tend to hold tightly to their beliefs even in the face of contradictory evidence. This cognitive bias implies that impressions, once formed, are difficult to change (Flynn et al., 2017).

The illusory truth effect refers to the cognitive phenomenon whereby constant exposure to fabricated information increases its likelihood of being judged as true. A large body of research on cognitive psychology has demonstrated that constantly exposing people to falsehood will increase belief in the false information as people rely on familiarity in their cognitive processing (Pennycook, Cannon & Rand, 2017). This has important implications for how we come to believe oft-repeated information that may be misleading or erroneous (Fazio, Brashier, Payne & Marsh, 2015).

Attempts to correct people's belief in false information can sometimes trigger a *backfire effect*. Conceptualized as a manifestation of confirmation bias, the backfire effect refers to a tendency of people to give more credence to evidence that supports their preexisting belief while fight back and

reject information that contradicts their belief. In other words, debunking an ideological belief reinforces rather than weakens the belief itself (Swire, Ecker, & Lewandowsky, 2017).

Similar to the illusory truth effect, the familiarity backfire effect rests on the premise that familiarity towards a piece of information increases its chances of being processed as valid (Ting & Song, 2017). In other words, constant repetition and exposure to misinformation would enhance its believability. A piece of false information can be further entrenched in one's mind just from being exposed to repetitions of it (Swire et al., 2017). In short, people's belief in fake news often induces resistance to correction, especially when it challenges one's worldview. People would only accept new evidence when corrective information does not trigger a defensive emotional reaction.

The Emotional Appeal of Fake News

Information processing is not an entirely cognitive process devoid of emotions. Research has shown that emotions are a critical component in how people process false information. They also have important implications on information seeking and sharing behavior. The reasons that unsubstantiated information often resonates with individuals is rooted in "how they feel about it as much as –if not more than–how they think about it" (Zimdars & McLeod, 2020). While credence is arguably a determining factor in information sharing, information that provokes an emotionally charged response stands good chances to go viral irrespective of its believability (Berger, 2011). In an analysis of a large corpus of tweets, Vosoughi, Roy, and Aral (2018) concluded that false stories were 70% more likely to be retweeted as they evoked diverse emotional responses among Twitter users. From this, we surmise that much of the success of fake news lies in its potential to tap into individuals' emotions.

Source-layering and Source Credibility

The availability and accessibility of large-scale information sources have complicated the process of assessing the credibility and the believability of information, thereby prompting a rethinking of long-standing assumptions and narratives. As social media are becoming the main vehicle of information production and consumption online, users have shifted from being passive consumers of information, to being active content producers. Layering of sources on the Internet has overshadowed the role of professional gatekeepers. Against this background of decentralized media production, individuals tend to rely more on cognitive heuristics rather than systematically processing information to assess the credibility of information sources (Metzger, et al., 2010). This is consistent with recent research showing that users – instead of systematically processing the content of a website – tend to rely on peripheral cues of a website to assess its credibility (Kang & Sundar, 2016).

Social Influence

Besides the psychological factors, social influence is a fundamental variable in affecting people's susceptibility to believing false information. Social endorsement cues, defined as an aggregate representation of the support of others, are salient components of online information and credibility judgments (Edwards et al., 2013). This aligns with social influence theories where social endorsement cues are essential to make decisions in situations of uncertainty and to make decisions that conform to social norms (Smith, 2010). When uncertain about how to think or act in a puzzling situation, people tend to look to the attitudes and actions of other people. Unlike normative social influence where people conform to be liked or accepted by others, informational social influence is a process of social conformity where individuals use the attitudes or actions of those around them as cues to correcting their own behavior in an attempt to make informed decisions (Smith, 2010).

Media Factors

Apart from human factors – individual-cognitive and psychological biases– which may increase people's susceptibility to believing and spreading false information, media factors, particularly social media, present novel challenges arising from the persistence of false information. The Internet and social media have lowered entry barriers into the media industry, resulting in a drastic shift in news consumption patterns. This has significantly disrupted traditional mainstream journalism and undermined audiences' trust in longstanding media institutions (Welbers, 2016). Exposure to a multitude of information sources prompts people to rely even more heavily on heuristics and social cues to determine the credibility of information they encounter. The descending trust in media credibility is largely ascribed to the increasing use of the Internet and social media which gives rise to filter bubbles and echo chambers, bots and false amplifiers. These conditions provide an ideal breeding ground for false information to spread and persist (Ting & Song, 2017).

Following a wave of euphoria over content democratization, there is now mounting concern that social media may instead be undermining democracy (Tucker et al., 2018). With the emergence of the participatory web, user generated content has become an increasingly important part and parcel of digital culture. This has brought significant changes to the news media industry. One of the most profound changes in the modern media environment is the decentralizing effect of media and declining role of centralized gatekeepers that were previously employed to guard against the proliferation of inaccuracies (Williams et al., 2004). Digital and social media have lowered the threshold for creating and circulating information. Unprecedented access to low-cost content creation and distribution has blurred the lines between amateur and professional publishing (Nielsen, 2017). The creation, personalization, and distribution of digital media content by ordinary users, rather than by the traditional content providers in the established media industries, has fueled an explosion of unverified, unsourced information and news (Kalsnes, 2018). The democratization of content creation and distribution has not been adequately coupled with effective monitoring and filtering mechanisms. Accordingly, the ever-increasing volume of online content brings forward potential challenges regarding the human capacity to process today's fast-paced information (Kalogeratos et al., 2018). Despite being long touted as a catalyst for social change, collective action, and new forms of expression, Facebook and Twitter are increasingly more perceived as the bearer of fake news than as tools for empowerment and social change (Guess & Lyons, 2020).

Social media platforms are recognized as the primary gateway through which individuals are exposed to fake news. The algorithmic filter bubbles and echo chambers that have popularized these platforms may also increase users' exposure to fake news (Rhodes, 2021). Filter bubbles are an example of selective exposure defined as the predisposition to “seek information that is congruent” with “prior knowledge, beliefs, and opinions, and to avoid exposure to information that conflicts with those internal states” (Case & Given 2016, p115). Research has also found that homophily – the tendency for people to aggregate and form groups based on common interests and beliefs – plays a fundamental role in the spreading of false information online (Rhodes, 2021). Internet service providers are constantly refining their algorithms in a way that aligns with user-friendliness and match the user profile. News stories that conflict with the views of the reader are more frequently being disregarded (Black, 2018). As users get less exposure to conflicting viewpoints, they end up becoming isolated intellectually in their own informational bubble (Pariser, 2011).

Intense political polarization and the propagation of fake news are often said to be caused or exacerbated by echo chambers – the term that refers to one-sided sources of information. Filter bubbles place like-minded users in an echo chamber of their own beliefs (Pariser, 2011). Socializing with people of similar background may heighten social polarization, thereby decreasing the

likelihood of encountering ideologically cross-cutting news content (Spohr, 2017). Within social identity theory, the need for social acceptance and affirmation is essential to a person's identity and self-esteem. As such, users are more likely to choose "socially safe" options when consuming and disseminating news information (Shu, Bernard & Liu, 2018). In brief, social media algorithms create a relatively homogenous social space that echoes beliefs and reinforces a shared narrative within one's likeminded network (Wohn & Bowe, 2016).

d. Digital Media Literacy (DML)

The mounting concerns over fake news propagation have sparked a renewed interest in digital media literacy education. There have been renewed calls to recognize the need for critical readers and writers of online media (Share, Tatevik & Lopez, 2020). The concept of digital media literacy (DML) is defined in the literature as the ability to access, analyze, create and use digital media. This includes everything from knowing how to find credible information online to being able to communicate using digitally mediated technologies (Hague & Payton, 2010). Through digital media literacy instruction, students will be better placed to use digital technology to engage in self-directed enquiry and to discriminate between multiple sources of information. The changing tide in media ecosystem makes knowing how to search for, use properly, and evaluate information a critical skill for the 21st century. While teachers are cognizant of the importance of incorporating the 21st century skills into their existing curriculum, the challenge is how to empower their students to identify legitimate sources and disregard untrustworthy information (Kirkland, 2020).

In the past recent years, there has been a growing consensus on the importance of digital and media literacy for twenty-first century students. In a world increasingly mediated by digital technologies, the skills, competences and knowledge underpinning DML skills are ever more important for students to survive and thrive online. In an era where more students turn to social media for their daily updates, knowing how to effectively search for and critically appraise information is needed today more than ever (Livingstone et al., 2013). Being an informed consumer of information is a critical aspect of the consumer-producer dynamic of DML. In a post-truth world, the digitally literate learner pursues truth through ongoing inquiry, ethical participation, and informed knowledge production (Gambill, 2020). DML provides guidance on where to draw the line between decisions based on sound evidence, and decisions based on poorly informed claims (Cooke, 2018).

News awareness occupies a central position in empowering students to navigate and understand the world. In the context of higher education, it is often assumed that today's students, dubbed as digital natives, are skilled in computer use and information retrieval and thus use digital media competently. While the vast majority of university students are confident users of the internet, they are not necessarily *competent* users. Recent studies have shown that students, despite being tech-savvy, perform poorly when it comes to accurately judging the reliability of web-based content (McGrew et al., 2018). Students seem to be lacking the digital and media literacy skills needed to identify the most credible information (Purcell et al., 2012). The Stanford History Education Group conducted a large scale study in 2016 to judge the credibility of online information among 7,804 high and college students across the United States. Findings from the study revealed that 80% of the respondents could not identify the difference between an advertisement and a news story; distinguish between real and fake news stories; identify bias in a tweet; or determine the credibility of a website (Stanford History Education Group, 2016, p. 4).

The growing concern over social media infodemic has prompted calls to recognize the need for critical readers and writers of media. Rather than simply verifying information as either true or false, students need to learn to search for multiple sources, different perspectives, and various types of evidence to triangulate and evaluate findings (Share, Mamikonyan, & Lopez, 2019).

Hodgin and Kahne (2018) contend that despite the loads of misinformation online, media literacy instruction that empowers youth in judging the credibility of web-based information is lacking. The authors call for the inclusion of critical media literacy instruction to empower students in developing a "healthy level of skepticism" to critically evaluate internet-mediated content and identify trustworthy sources of information (Hodgin & Kahne, 2018).

This section reviewed the state-of-the-art research in the area of misinformation and social media. Despite the seemingly large-scale research on digital media literacy, empirical research in the context of higher education is still at a nascent stage. The vast body of the reviewed literature attests to the pervasive influence of social media on information propagation. It also testifies to the complexity and controversial nature of the phenomenon studied. Critically analyzing and evaluating digitally mediated information is instrumental to cope with the oversupply of unstructured information. Without proper means of identifying and evaluating online information, unsubstantiated information will continue to circulate unhampered.

III. Methods

This correlation study set out to explore undergraduate students' perceptions, attitudes, and practices towards information disorder on social networking sites. To this end, a web-based survey was administered to gauge Moroccan undergraduate students' digital media literacy skills, particularly in what regards their ability to identify and evaluate information online. The online survey instrument required respondents to self-report their online media consumption patterns to assess the level to which they seek out quality sources of information. The survey was informed by the ACRL information literacy Standards framework (2000), particularly in what regards locating and retrieving information, evaluating information, organizing information, and incorporating information ethically.

The survey was administered to undergraduate students in their final year of bachelor's studies, majoring in English studies in a Moroccan higher education institution. In their final year before graduation, students were taught a course on media literacy education. Out of 333 enrolled students, 161 completed the survey with a response rate of 48%. The survey was designed to collect both quantitative and qualitative data with a total number of 19 questions of various formats, ranging from multiple choice questions, self-assessment items, close-ended questions, likert scales to open-ended questions. Responses were collected online via Google Forms between July 3 to August 3, 2021. A pilot test was conducted to test the reliability of the survey. Cronbach's alpha was calculated to assess internal consistency reliability of the 19-item questionnaire, with a mean score of 0.866.

Additionally, the survey sought to determine whether there was a significant relationship between digital media literacy skills (DMLS) and students' ability to identify information disorder (IDO) on social networking sites. Correlation analysis was applied to test if the two variables (DML/ICB) are correlated. To test the validity of the hypothesis, Pearson correlation coefficient was calculated.

The data were cleaned, coded, and entered into the Excel spreadsheet for further manipulation and statistical descriptive analysis. Descriptive summaries and frequencies of variables were generated and their relative percentages were estimated. The collected data were presented in tables and analyzed statistically using frequencies and percentages.

IV. Findings

This section outlines findings from the self-administered web-based survey which was designed to collect data about students' online news seeking/sharing behavior as well as their digital media literacy skills to identify mis/disinformation. To assess the frequency usage of social media as a news source using a five point Likert-type scale from 1-"all of the time" to 5-"none of the time," roughly half of the informants (48%) most of the time obtained news from social media, more than a quarter all the time (27%) and about one fifth some of the time (19%). Participants were asked to specify the social media platform mostly used for information seeking/sharing. To this end, eight multiple answer options were provided, allowing respondents to select more than one answer choice. More than two-fifths of the survey takers (46%) selected social networking sites, followed by video- sharing sites (28%), and WhatsApp Messenger (18%).

When asked to rate their level of concern about the accuracy of information on social media on a five-point scale where 1 is not at all concerned and 5 is extremely concerned, more than six in ten of the respondents (62%) reported that they are extremely concerned, less than a third are moderately concerned (26%), and just over one in ten are not at all concerned (12%). As an extension to this question, respondents were asked to indicate their level of trust in news from social media platforms on a rating scale where 1 is 'not at all trustworthy' and 5 is 'completely trustworthy.' More than two-fifths (45%) of the participants moderately trust news on social media, about one third (34%) somewhat trust, while just over one in ten (13%) do not trust at all. A common challenge reported amongst learners was the volume and speed of news production and dissemination. More than two-thirds (69%) of the respondents said the sheer amount of news was overwhelming.

To rate the media on which they commonly come across fake news, six multiple answer options were provided – including the 'other' option, allowing respondents to select more than one answer choice. Table 1 provides descriptive statistics for the variables used. Social networking sites, multiplatform messaging app, and video sharing sites are reported as being the most common social media platforms that propagate unsupported information.

| Social Media Platforms | Frequency (N) | Percentage (%) |
|---|---------------|----------------|
| Social Networking sites (e.g. Facebook) | 61 | 76 |
| Multiplatform messaging app (e.g. Whatsapp) | 53 | 66 |
| Video sharing sites (e.g. Youtube) | 41 | 51 |
| Microblogs (e.g. Twitter) | 13 | 16 |
| Online Blogs/forums | 7 | 8 |
| Other | - | - |

Table 1. Users' Exposure to Fake News on Social Media

Using a five point frequency scale from 1-"all of the time" to 5-"none of the time," roughly two-fifths (40%) of the respondents most of the time verify the information they receive or forward on social media, one third (34%) all of the time, and more than one fifth (22%) only sometimes. As for gauging students' attitudes towards unsubstantiated news, almost half of the participants (47.5%) choose to ignore unverified or unsourced post, more than one-third (37.5%) become skeptical and investigate it, and one in ten (10%) become skeptical, but choose not to investigate it (See Table 2). This is indicative that undergraduate students invest little time and effort in filtering unverified or unsourced posts. In response to whether participants only post news feed that supports their views, nearly half (48.8%) responded with "Yes", more than one fifth (22.5%) with "No," and fewer than a third (28.7%) with "Not Sure."

| | Frequency (N) | Percentage (%) |
|--|---------------|----------------|
| I choose to ignore it | 76 | 47.5% |
| I become skeptical and investigate it | 60 | 37.5% |
| I become skeptical, but I choose not to investigate it | 8 | 10% |
| I take face value (I accept it as it) | 7 | 9 % |
| Other | | |

Table 2. Attitudes Towards Unverified or Unsourced post

Respondents were also asked to rate their level of confidence in their ability to tell real news from fake news using a 5-point Likert scale (1 = not at all confident; 5 = very confident). Half of the respondents (50.6%) reported being somewhat confident while only a quarter (26%) reported being confident. More than half of students (55%) say they lack critical thinking and information skills to help them combat fake news online. When asked to rate their level of concern over the propagation of fake news on social media on a five-point likert scale (1= not at all concerned to 5= very concerned), nearly half (46%) of the responding students reported being very concerned and roughly a quarter (24.1%) reported being extremely concerned. Roughly one third (32%) agreed that fake news had made them distrust the credibility of news circulating online. Six in ten (60%) of users do not understand the role of algorithms in arranging the contents of their social media newsfeeds.

As to whether or not fake news proliferated in times of Covid 19, nearly nine in ten (88.6%) strongly agree that the pandemic has spurred an upsurge in unregulated and unverified information. Six in ten (61%) perceive traditional media as the most trusted source of news in times of crisis. About three-quarters (73%) of the responding students revealed sharing a news story with others that they later found out was wrong or untrue over the past six months. More than two fifth (42%) opined that it is possible to counteract the spread of fake news online and two-thirds (66%) called for strengthening laws and regulations to better deal with the propagation of fake information.

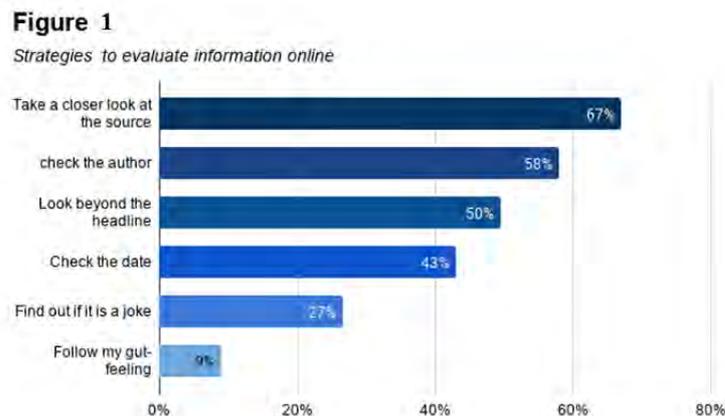
Using a 5-point likert scale where 1 indicated strongly disagree and 5 strongly agree, the responding students were asked to rate their level of agreement or disagreement with seven specific statements on news consumption in times of uncertainty. Table 3 shows that the majority of students tend to accept information that aligns with their beliefs and viewpoints while only a minority critically evaluate information based on facts, set aside their emotions when judging the credibility of information, and approach viral news with some skepticism.

| | 5 | 4 | 3 | 2 | 1 |
|--|---|---|---|---|---|
| | | | | | |

| Statements | Frequency (N) | | | | | Mean |
|---|---------------|----|----|----|----|------|
| 1. I only accept information that aligns with my viewpoints | 40 | 88 | 0 | 24 | 8 | 3.7 |
| 2. I critically evaluate information based on facts, not on opinions and beliefs | 16 | 32 | 2 | 56 | 40 | 2.08 |
| 3. I tend to set aside my emotions when judging the credibility of information | 48 | 32 | 0 | 69 | 12 | 3.4 |
| 4. Tend to rely on my intuition when evaluating information | 72 | 48 | 0 | 13 | 28 | 3.6 |
| 5. I turn to the circle of friends and acquaintances in my social network to keep updated | 40 | 59 | 0 | 23 | 39 | 3.1 |
| 6. I connect with the community of like-minded people | 54 | 60 | 8 | 21 | 16 | 3.8 |
| 7. I approach viral news with some skepticism | 33 | 24 | 15 | 48 | 40 | 2.6 |

Table 3. News Consumption in Times of Uncertainty

When asked whether they identify the source from which the news is taken, the vast majority (three quarters) responded with 'Yes'. In order to assess how students evaluate information online, six multiple answers in a checkbox-type question were provided including 'the other' option (See Figure 1). Taking a closer look at the source, checking the author, and looking beyond the headline are among the most cited strategies used to evaluate information online.



Additionally, the survey sought to determine whether there was a significant relationship between digital media literacy skills (DMLS) and students' ability to identify information disorder online (IDO.) Correlation analysis was applied to test if the two variables (DMLS/IDO) are correlated. The variables were measured using a ranking scale of 1 to 100. The Survey takers were asked to rank their competence level of digital media literacy skills (DMLS) and rank their ability to identify information disorder online (IDO). The hypothesis was tested using a significance level of 1% (0.01) and Pearson correlation coefficient. The following alternative and null hypotheses have been formulated:

- Null Hypothesis (H0): There is no correlation between digital media literacy skills (DMLS) and students' ability to identify information disorder online (IDO)
- Alternative Hypothesis (Ha): There is a positive correlation between digital media literacy skills (DMLS) and students' ability to identify information disorder online (IDO)

To test the hypothesis, the probability value was calculated to obtain the p-value, with a score of 0.00, a significance level of 1% (0.01) and a Person correlation coefficient of .691** (See table 4).

The table shows that there is a positive correlation between digital information literacy skills (DMLS) and students' ability to identify information disorder online (IDO). This implies that there is a significant relationship between the level of digital media literacy and students' ability to evaluate news credibility. One can conclude that as students' digital media competence improves, their information processing performance can improve as well and vice versa.

| | | DILSs | ISB |
|-------|---------------------|--------|--------|
| DILSs | Pearson Correlation | 1 | .691** |
| | Sig. | | .000 |
| | N | 151 | 151 |
| ISB | Pearson Correlation | .711** | 1 |
| | Sig. | .000 | |
| | N | 151 | 151 |

Table 4. Pearson correlation analysis (DILSs/ISB)

V. Discussion

The results of the study provide valuable insights about undergraduate students' online information seeking/sharing behavior and their digital media literacy competence in the era of mis/disinformation. The findings of the present study are consistent with the overarching hypothesis guiding this research that undergraduate students become better positioned to evaluate the credibility of information online only when they are cognizant of digital media literacy skills. The findings are also in line with previous studies indicating that undergraduate students lack the necessary digital media skills to efficiently navigate and process online information.

The study confirms that undergraduates tend to utilize easy-to-use sources and follow the principle of least effort while searching for online information. Users, overwhelmed by the amount and speed, tend to spend minimal time to check the origin, credibility, truthfulness of the information they receive. This research has also shown that undergraduate learners do not apply fact checks to the information they encounter online. Additionally, they have basic understanding of the role of algorithms in arranging the contents of their social media newsfeeds. As such, they seem unable to recognize substantiated from unsubstantiated information.

In spite of the ubiquity of media literacy instruction programs in academia, university students still lack confidence in their ability to distinguish reliable news from misinformation or disinformation. A fair majority of teenage students are vulnerable to information disorder due in large to the overwhelming information overload available on the internet along with their seemingly lack of basic digital strategies for processing information online. Faced with a daily barrage of news, university students find it overwhelming to discern truth from untruth. Exposure to a multitude of information sources prompts people to rely even more heavily on heuristics and social cues to determine the credibility of information they encounter (Welbers, 2016). With loads of decisions to make in this fast-paced world and the massive volume of information on the web, it is human nature to rely on heuristics or mental short cuts to process information (Ting & Song, 2017).

The frequent use of social networks as a news source among students calls into question the reliability and validity of the obtained information. Despite being concerned about the accuracy of information on social media, a fair number of the respondents fail to verify the information they receive or forward on social media and choose instead to ignore unverified or unsourced post. This

is indicative that students invest little time and effort in identifying false narratives. The amount of trust users place in news on social media is a further evidence of their susceptibility to fake news. As for attitudes towards information sharing, an important proportion of students reported sharing news content regardless of who posted it and irrespective of its veracity. This is exacerbated by the relatively small proportion of users who all or most of the time verify the information they receive or forward on social media. Unsubstantiated information can proliferate whenever people are unwilling or unable to take the time to look into the facts. The tendency to become skeptical, but not choose to investigate an unverified or unsourced post is a common practice among students. As a strategy to identify fake news on social media, users reported considering the identity and background of the person posting the story.

The results support previous research that being a member of a homogeneous group increases the likelihood of rating a piece of fake news as true compared to participants in heterogeneous groups. Individuals surrounded by homogeneous information will rate fake news as more believable compared to those who read news from opposing viewpoints. The tendency to preferably interact with people of similar profiles and viewpoints may reduce the heterogeneity of the user's perceived public debate, thereby reducing their exposure to conflicting arguments (Kalogeratos et al., 2018). As students get less exposure to conflicting viewpoints, they end up becoming isolated intellectually in their own informational bubble.

Whilst most students report limited critical analysis of information, they do reveal concerns about the free and unregulated flow of information. Despite the relatively low level of confidence in their ability to critically evaluate sources of information, a significant number of students voice their utmost concern over the propagation of unverified content on social media. Almost all the respondents agree that this has been further exacerbated amid Covid 19 pandemic which has spurred an upsurge in unregulated and unverified information. In this time of heightened uncertainty, individuals tend to place more trust in traditional media than online news media. Part of the explanation lies in the individuals' tendency to process a manageable amount of information. The propagation of fake news had led social media users to distrust the credibility of news circulating online. Despite the proliferation of social networks, individuals continue to maintain confidence in traditional information media to access quality information in times of crisis (Ferreira & Borges, 2020)

News consumption patterns in times of uncertainty provide compelling insights into online users' behaviors. Students tend to accept information that aligns with their beliefs and viewpoints. Findings from the study also revealed that only a minority of students critically evaluate information based on facts, set aside their emotions when judging the credibility of information, and approach viral news with some skepticism. When confronted with conflicting claims, students tend to connect with the community of like-minded people in their social network. These dynamics can undermine students' ability to take informed decisions in times of crisis. This aligns with social influence theories where social endorsement cues are essential to make decisions in situations of uncertainty and ambiguity and to make decisions that conform to social norms (Smith, 2010). The formation of filter bubbles limit users' exposure to alternative viewpoints, thus creating an intellectual isolation that constantly reinforces their preconceptions (Pariser, 2016).

With the expansion and complexity of online media, an overarching sense of uncertainty prevails with people likely to lend more credence to sensational news stories than to factual reasoning. Scientific reasoning is scarified in favor of whatever information suits one's needs or aligns with their beliefs. In the post-truth world, facts become subservient to emotional appeal. Emotionally loaded content takes precedence over logical reasoning (Cooke, 2018). Similar to previous studies (Zimdars & McLeod, 2020), this study has found that much of the success of fake news lies in its potential to tap into individuals' emotions. This implies that individuals are more inclined to trust viral information that provokes an emotional response regardless of how accurate it is.

VI. Implications, Recommendations, and Conclusions

This paper set out to explore online users' information consumption patterns and investigate how they engage with, identify, and evaluate unsubstantiated information on social networking sites. The study provided empirical insights into the complex relationship between digital media literacy and online information processing. The findings of the present study are consistent with the hypothesis guiding this research that undergraduate students become better positioned to evaluate the credibility of information online only when they are cognizant of digital media literacy skills. The findings are also in line with previous studies indicating that undergraduate students lack the necessary digital media skills to efficiently navigate and process today's information saturated landscape. The results are also consistent with the literature on information consumption in times of uncertainty, as is the case with the current pandemic, a period marked by media dependence to keep abreast of new developments.

The study closely examined existing research to establish a foundational understanding of the dynamics governing information consumption in the era of fake news. The case study identified multiple motivations underlying undergraduates' drive to seek and share information on social media. A diverse set of cognitive, social, and algorithmic biases contribute to individuals' vulnerability to unsupported information. The vast body of the reviewed literature attests to the pervasive influence of social media on information propagation. Critically analyzing and evaluating digitally mediated information is instrumental to cope with the oversupply of unstructured information. Without proper means of identifying and evaluating online information, unsubstantiated information will continue to circulate unhampered.

The new digital age calls into question the production and dissemination of narratives online. Navigating today's ever-widening news space requires negotiation and seasoned evaluation skills. In an age where tweets and Facebook statuses are being reported as news, digital media literacy becomes a must to empower individuals with the ability to become critical consumers and creators of media. Equipping undergraduates with critical thinking skills would boost their *immunity* to the never-ending stream of falsehoods circulating in our information ecology.

In the midst of the current information landscape and the increasing prevalence of misinformation, there is a need for media literacy courses to equip students with the tools to think critically about the news that they consume and share. This study opines that students will be better equipped to evaluate news sources only when they have received appropriate instruction and training. Although digital media literacy has been recognized as an integral asset to increase awareness of online falsehoods, curricula could be redesigned by integrating activities that prompt students to reflect on their prejudices and biases. One way to overcome confirmation bias is to expose individuals to a plethora of conflicting views and engage in self-reflection to challenge their personal assumptions. Educators and instructional designers should join efforts and direct their focus to design content that is geared towards increasing awareness among students of their own personal biases, along with the hidden biases in the news and information they encounter online.

Further research is needed to better understand whether the underlying existing models of DML are valid in highly technological environments to meet students' information needs. Much of the literature on digital media literacy instruction is descriptive or prescriptive. More empirical research is needed to help understand effective instructional methods to re-conceptualize DML instruction for digitally oriented students.

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