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DigComp and MIL frameworks contribute to fight fake news and disinformation

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ABSTRACT

Introduction: The consumption of information and news in the virtual environment, characterized by infinite content, permanent connection and information overload, makes it difficult to discern what is or is not factual information. **Objective:** The objective is to investigate what are the guidelines proposed by the DigComp and MIL documents to prepare individuals against fake news and misinformation. **Methodology:** Content Analysis, more specifically categorical analysis, was used to analyze the selected frameworks. Three analysis categories were created with seven inferences. **Results:** In the Key Concepts category, only misinformation inference is presented in both documents. There are recommendations for the evaluation of information in non-traditional information environments, as inferred in category two in both analyzed frameworks. It was found that DigComp brings specific guidelines regarding the Skills, Knowledge and Attitudes category, while the MIL includes two of the three inferences proposed in the category. **Conclusion:** The documents offer a set of conceptual, pedagogical and strategy-action references that provide guiding elements for the preparation of users, and it is imperative that information professionals are proactive in relation to misinformation and fake news, in addition to knowing, analyzing and criticizing the available references to develop strategies based on the integration of different skills to prepare subjects to use non-traditional informational environments.

KEYWORDS

Fake news. Disinformation. Media and information literacy. Digital literacy. Information literacy.

Contribuições dos *frameworks* DigComp e MIL para combate às *fake news* e à desinformação

RESUMO

Introdução: O consumo de informações e de notícias no ambiente virtual, caracterizado pelo conteúdo infinito, conexão permanente e excesso informacional, dificulta o discernimento do que é ou não uma informação factual. **Objetivo:** Investigar quais são as diretrizes propostas pelos documentos DigComp e MIL para preparar os indivíduos contra às *fake news* e a desinformação. **Metodologia:** Utilizou-se a Análise de Conteúdo, mais especificamente a análise categorial, para análise dos frameworks selecionados. Foram criadas três categorias de análise com sete inferências. **Resultados:** Na categoria Conceitos-chave, apenas a inferência de desinformação é apresentada nos dois documentos. Há

recomendações para a avaliação da informação em ambientes informacionais não tradicionais como inferido na categoria dois em ambos os frameworks analisados. Verificou-se que o DigComp traz diretrizes pontuais quanto a categoria Habilidades, Conhecimentos e Atitudes, enquanto o MIL, contempla duas das três inferências propostas na categoria. **Conclusão:** Os documentos oferecem um conjunto de referenciais conceituais, pedagógicos e de estratégia-ação que oferecem elementos norteadores para a preparação dos usuários e é imprescindível que profissionais da informação sejam proativos em relação desinformação e *fake news*, além de conhecer, analisar e criticar os referenciais disponíveis para que desenvolvam estratégias fundamentadas na integração de diferentes competências a fim de preparar os sujeitos para utilizar os ambientes informacionais não tradicionais.

PALAVRAS-CHAVE

Fake news. Desinformação. Competência midiática e informacional. Competência digital. Competência em informação.

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1 INTRODUCTION

The uninterrupted and frenetic sharing of information has become a relevant issue for Science, given the virtual environment characterized by endless content, constant connectivity, and information overload. Consequently, a characteristic problem arises in these environments, as both factual and non-factual information circulate within a context of overabundance. This can facilitate the manipulation and lack of reliability of information within the network, particularly affecting individuals who may not necessarily possess expertise, knowledge, or responsibility for what they share. These reconfigurations in information sharing and usage highlight new demands and challenges for researchers across various fields, including Information Science (IS).

It is noteworthy that in this scenario, the citizen, besides being a user, is also a creator of the content available on the network. The proliferation of the internet and social networks, driven by the development of new Digital Information and Communication Technologies (DICT), has facilitated an increasingly interconnected world where the consumption of information, news, educational, and entertainment activities through screens has grown.

In this context, the Brazilian population can be considered highly connected, with the number of Internet users in the country reaching 181.8 million people as of January 2023, which accounts for 84.3% of the population. Regarding social media, there are 116 million Brazilians on Facebook, 142 million users on YouTube, 113.5 million on Instagram, 108.4 million on WhatsApp, 82.21 million on TikTok, 59 million on LinkedIn, and 24.3 million on Twitter (Datareportal, 2023).

The internet, DICT, social networks, and instant messaging apps have been instrumentalized to propagate disinformation and fake news, taking on new configurations, meanings, and significance as phenomena. Consequently, new ways of impacting society have emerged, necessitating a primary focus on fostering skills related to source evaluation and information literacy.

Considering this, the aim is to investigate which elements are geared towards addressing fake news and disinformation in the documents "Digital Competence Framework for Citizens" (Vuorikari; Kluzer; Punie, 2022) and "Media and Information Literate Citizens: think critically click wisely" (Grizzle *et al.*, 2021) as resources for information professionals, especially librarians who can contribute to individuals' education in diverse contexts. This investigation seeks to highlight how both traditional and non-traditional information spaces, such as the Internet, require new strategies to demonstrate how disinformation and fake news can be and are used for social manipulation. Thus, the specific focus is on determining the proposed guidelines in the selected documents to equip individuals against fake news and disinformation and to what extent these guidelines are complementary or address similar aspects.

2 THE ISSUE OF FAKE NEWS AND DISINFORMATION

Disinformation and fake news are not new phenomena (Fallis, 2015). The use of non-factual information for manipulation predates the invention of the Internet, Web, ICTs, and social networks. These more recent tools have granted a level of autonomy to information users that was previously unseen, while also enabling greater scalability in information sharing. However, while the use of the Internet, ICTs, and social networks creates diverse and unexpected possibilities for the dissemination of information and knowledge, it also fosters environments where information manipulation is facilitated.

Santos-D'Amorim and Miranda (2021) analyze the terms incorrect misinformation, disinformation and malinformation, highlighting the difficulty in reaching a consensus on the

semantic definition of these concepts. It is necessary to consider the plurality of types and levels of disinformation to truly understand the phenomenon, as it encompasses different contexts of information such as incomplete, distorted, false, manipulated, outdated, or taken out of context information. This article will focus on the terms fake news and disinformation.

Initially defined as a lack of information, studies on disinformation have expanded their definitions since the 2000s due to the complexity of the phenomenon, encompassing aspects such as distorted, inaccurate, decontextualized information that appeals to personal beliefs and emotions (Heller; Jacobi; Borges, 2020). Disinformation can be characterized as a phenomenon in which non-factual and/or deceptive information is intentionally created and disseminated, with manipulation aiming to gain political and economic advantages, thereby undermining democracy (European Commission, 2018).

One tool of disinformation (Heller; Jacobi; Borges, 2020), fake news can be understood as false content that mimics the format of journalistic news, aiming to capture the reader's attention intending to mislead them, achieving some form of benefit, or seeking social manipulation (Allcott; Gentzkow, 2017; Lazer *et al.*, 2018; Wardle; Derakhsha, 2019). Processes related to ensuring reliability, accuracy, and quality of information are deliberately overlooked, leading users to believe that fake news is genuine information (Lazer *et al.*, 2018).

Fake news appears in the form of out-of-context document fragments, sensationalist headlines, videos, or posts from unknown sources claiming to have insider information from reliable sources, disseminated through instant messaging apps and social networks. However, even though these contents are attributed to a certain status as sources of information, their creation, and sharing are done by users without any control (Tomaél; Alcará; Silva, 2021).

A strategy used by fake news producers is deliberate manipulation aiming to undermine rationality and caution in information use, compromising both individual and collective decision-making processes (Lazer *et al.*, 2018; Domingos, 2022). The main motivations behind their production are ideological, political, or financial (Tandoc Júnior; Lim; Ling, 2018; Araújo, 2021). Financial gains are achieved through viral dissemination on social networks, as provoking negative emotions often leads to the rapid and widespread distribution of alarming or urgently dangerous “news” or “information,” resulting in financial gains for the authors (Allcott; Gentzkow, 2017). In short, these fabrications of partially or entirely false, and even decontextualized news, are intentionally crafted and disseminated with the sole purpose of deceiving.

According to Tandoc *et al.* (2018), Vosoughi, Roy, and Aral (2018), and Molina *et al.* (2021), there is a more intricate facet of the phenomenon, where the term “fake news” has been used not only to refer to false news or information. Political candidates use the term to describe any information contrary to their positions and/or that highlights negative aspects of their public personas and parties, resulting in an inevitable polarization of the discourse (Vosoughi; Roy; Aral, 2018). Frequently employed as a cliché, the term also encompasses the aspect of a political and ideological slogan employed to undermine the credibility of news outlets, journalists, and even individuals with opposing views (Tandoc *et al.*, 2018; Molina *et al.*, 2021).

The term “fake news” has been under scrutiny since the 2016 US presidential election, during which “alternative facts,” i.e., untrue statements, were widely and openly used as a campaign strategy by then-candidate Donald Trump and his team, distorting the reality of events (Albright, 2017). In Brazil, this phenomenon gained momentum during the 2018 presidential elections with the elected candidate Jair Bolsonaro, intensified during the Covid-19 pandemic, and remains prominent in the 2022 presidential elections.

In the Brazilian context, fake news is often rooted in racism, sexism, LGBTQIA+ phobia, religious intolerance, skepticism toward science, moralism, and attacks on democracy. Nunes Júnior (2021) investigates the relationship between disinformation and the virality of fake news concerning Black individuals, highlighting how structural racism in Brazil perpetuates the construction of the image of the “criminal” as directly linked to Black men.

Systematic attacks are also directed at initiatives combating homophobia and promoting expanded rights for the LGBTQIA+ population, which have been targeted by disinformation using fake news linking the defense of the “traditional Brazilian family” with opposition to the so-called “gay kit” and “gender ideology” (Maranhão Filho; Coelho; Dias, 2018; Nunes Júnior, 2021). This archetype of the cis-hetero Christian “traditional Brazilian family” is used as a tool for manipulation by political and/or religious figures who exploit societal imagery to advance their agendas. In terms of attacks on democracy, continuous efforts to undermine the electronic voting system contribute to eroding public trust in the Brazilian electoral system (Geronimo; Cerveró; Oliveira, 2022). The objective is to generate public mobilization through conspiratorial content.

Given the complexity of fake news and disinformation, they must be assessed from multiple perspectives (Valverde-Berrocoso; González-Fernández; Acevedo-Borrega; 2022), demanding specific education, as proposed in the context of information and media literacies.

3 21ST CENTURY COMPETENCIES AS A RESPONSE TO DISINFORMATION AND FAKE NEWS

Information Literacy (IL) is recognized as a tool for individual and social empowerment, contributing to effective citizen participation in society. The transformations of disinformation and fake news phenomena in the face of changes related to the Web, ICTs, and social networks underscore the importance of IL, serving as an educational prerequisite for analytical, reflective, and responsible information use (UNESCO, 2003; IFLA, 2005). However, there are theoretical currents that suggest the notion of information underlying many CoInfo-related documents does not fully encompass the dynamics of online environments (Murawski *et al.*, 2019; Shabani; Keshavarz, 2021). As a result, the foundations of CoInfo have been integrated with other competencies, such as Digital Literacy (DL) and Media and Information Literacy (MIL).

The frameworks “Digital Competence Framework for Citizens” (DigComp) (Vuorikari; Kluzer; Punie, 2022) and “Media and Information Literate Citizens: think critically click wisely” (MIL) (Grizzle *et al.*, 2021) propose guidelines for fostering essential skills in individuals, particularly those related to information in social and technological contexts for the 21st century. These two documents were developed by official bodies, the European Commission and the United Nations Educational, Scientific and Cultural Organization (UNESCO), respectively. Both organizations have international prominence and over the years have established themselves in promoting the development of competencies related to media and digital devices. Furthermore, in both documents, the concepts of Digital Competence (DigComp) and Media and Information Literacy (MIL) are presented as umbrella terms that encompass various competencies associated with transformations in information and technological phenomena.

UNESCO has been a leader in media and information literacy efforts for decades (Dudziak; Ferreira; Ferrari, 2017) and has spearheaded the “Media and Information Literacy for All” project since 2012. The 10th Global Media and Information Literacy Week took place in 2021, focusing on the pandemic, marked by misinformation, a phenomenon dubbed the “infodemic.” The document proposes a discussion of these issues to develop a new understanding of information and how it is disseminated, emphasizing the need to go beyond formal education systems to develop new tools to reach all individuals (Grizzle *et al.*, 2021). The 2022 event focused on the urgent need for global funding to promote the development of media and information literacy in the fight against disinformation and the pursuit of truth (Unesco, 2022).

The DigComp Project is linked to the European Commission through the Joint Research Centre (JRC), which has been conducting research since 2005 to enhance the use of ICTs by European citizens for learning, innovation, and education. Initiated in 2010, the DigComp project was first published in 2014. This document presents a framework aiming to establish a common understanding among members of the European community regarding the digital skills needed in the current context, and it sets a parameter for assessing the level of proficiency in DC for European citizens. It has been consistently updated and has various versions, with the most recent being DigComp 2.2 in 2022, which addresses the phenomenon of disinformation considering new and growing demands within the realm of digital competence.

A general examination of the documents reveals that the organization of DigComp content is done in a more dynamic manner, through competency frameworks, while MIL is divided into two parts and includes a glossary, allowing for a more in-depth conceptualization of the terms presented in the text. The entities responsible for both documents assert that they are aimed at the public, even though MIL is presented as being intended for educators and citizens. However, it can be observed that the content and guidance proposed by DigComp and MIL are geared towards specialists such as teachers and librarians, given their complexity, detail, and organization. DigComp presents proficiency levels based on a set of predetermined knowledge, skills, and attitudes that can be measured through a specific tool available on the Digital Skills & Jobs Platform (European Commission, 2022) for proficiency testing. It offers contextualized work and educational scenarios, underscoring the role of specialists like CI professionals and educators in coordinating the implementation of the document's proposals. On the other hand, MIL is an extensive and detailed document that presents structured pedagogical propositions and group activities, which would be challenging for non-specialists or those outside of an educational context to carry out.

4 METHODOLOGICAL PROCEDURES

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This study is characterized as a documentary analysis, as it encompasses the apprehension, understanding, and analysis of two documents (Cellard, 2012), namely the frameworks "Digital Competence Framework for Citizens - DigComp" (Digital Literacy) (SILVA; BEHAR, 2019) and "Media and Information Literate Citizens: think critically click wisely – MIL" (Media and Information Literacy) (Dudziak; Ferreira; Ferrari, 2017), with the aim of identifying the proposed actions in these documents to combat fake news and disinformation.

The documentary research involves the apprehension, understanding, and analysis of the two documents, namely the "Digital Competence Framework for Citizens" (Vuorikari; Kluzer; Punie, 2022) and "Media and Information Literate Citizens: think critically click wisely" (Grizzle *et al.*, 2021) frameworks, to obtain information relevant to the research objective (Cellard, 2012).

As a treatment, analysis, and interpretation procedure of the results, Content Analysis (CA) was applied, which is defined as:

A set of techniques for analyzing communications to obtain, by systematic and objective procedures of description of the content of messages, indicators (quantitative or not) that allow inference of knowledge relative to the conditions of production/reception (inferred variables) of these messages. (Bardin, 2016, p. 44).

It is made explicit that the choice of the CA method is to achieve indicators through systematization and objectives of description of message content, allowing the inference of knowledge related to the description of reality based on non-quantifiable data.

The application of the method followed Bardin's (2016) organization, with different phases of analysis in three stages.

The first phase, pre-analysis, characterized as an organizational phase, involved the initial reading of the documents concurrently with the review of the theoretical framework related to the CD, MIL, disinformation, and fake news context. A reading of the main topics: presentation, content parts, and the history of the organization that prepared the document, was conducted. Indicators were then developed in this phase to guide the interpretation and formal analysis of the DigComp and MIL documents.

In the material exploration phase, the documents were analyzed in greater depth to define units of registration. Based on the literature review conducted by the authors, it was determined that the theme would be the "unit of registration," identifying congruence and divergences in both documents regarding the themes. The last phase involved the designation of units of registration based on three themes, also established by the researchers through the identification of relevant aspects related to the phenomena of disinformation and fake news based on the theoretical framework.

The third phase, inference, and interpretation was built upon theoretical assumptions about disinformation and fake news, as well as the exploration of the concepts of Information Competence, Digital Competence, and Media and Information Literacy. The proposed inferences were grounded in historical and social contexts, seeking to identify the proposed actions to combat fake news and misinformation in both documents, in accordance with the overall research objective. The categories and inferences were grouped by similarity, describing the factors that unite them, respecting the qualities mentioned earlier.

Three categories of analysis were constructed, which are outlined in Chart 1.

Chart 1. Categories of analysis and their respective inferences

Categories of analysis	Inferences
1. Key concepts	A – Definition of fake news.
	B – Definition of disinformation.
2. Information assessment	A – Principles for critical evaluation of information in the context of ICT, social networks, instant messaging apps, and media.
	B – Principles of evaluation based on objective processes that ensure accuracy, authority, objectivity, timeliness, and comprehensiveness regarding what constitutes factual information.
3. Skills, knowledge, and attitudes	A – Systematized strategies that relate skills, knowledge, and attitudes specifically aimed at combating misinformation and fake news.
	B – Systematized strategies that relate skills, knowledge, and attitudes aimed at recognizing the manipulative aspects of fake news.
	C – Systematized strategies that relate skills, knowledge, and attitudes focused on the use of fact-checking tools.

Source: Authors, 2022.

The categories were defined *a posteriori*, aiming to identify the actions proposed in the DigComp and MIL documents for combating fake news and misinformation, as well as to present the analyses and reflections on these proposals in the analyzed documents.

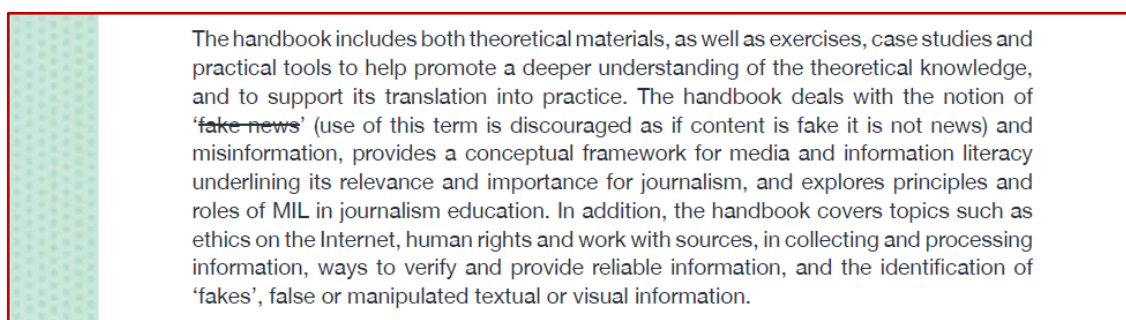
5 DIGCOMP AND MIL ANALYSES

The first category of analysis, "Key Concepts," examines whether and how the documents address the definitions of fake news and misinformation. It was found that both analyzed documents have the definition of Misinformation, but only MIL provides the definition of fake news. DigComp uses the term "fake news" only three times throughout the document and does not provide a definition for it. It can be inferred that the term is understood in this document as false or misleading content related to misinformation, as indicated by the

passage "[...] misinformation on social media and news websites (e.g., fact-check information and its sources, fake news, deep fakes) [...]" (VUORIKARI; KLUZER; PUNIE, 2022, p. 6). The lack of a clear definition of fake news in DigComp could compromise citizens' understanding of the phenomenon. Although it is a widely used and prominent term in the media recently, its key characteristics are not generally elucidated, such as the mimicking of news format that leads individuals to believe it is factual information (LAZER et.al, 2018) and the intent of manipulation leading to loss of rationality (DOMINGOS, 2022). Thus, the absence of a definition for the term may affect the strategies proposed for combating fake news presented throughout the document.

On the other hand, MIL discourages the use of the term “fake news” by emphasizing that if content is misleading, it cannot be considered news. “[MIL] Discredits the popular term 'fake news' and calls it what it really is – false or misleading content” (GRIZZLE et al., 2021, p. 148). The document employs a strike-through graphical representation of this term throughout the text, as seen in Figure 1:

Figure 1. Example of strike through graphical representation of this term throughout “fake news” at MIL



Source: Grizzle et al., 2021, p. 43.

Such an option can be problematic, as describing fake news merely as “false content” does not explicitly convey the intention of social manipulation (Allcott; Gentzkow, 2017). Even though it points out that the popularity of its use may conceal factual information, it does not encompass how the term fake news has also been used as a political and ideological slogan to discredit true information (Tandoc et al., 2018; Vosoughi; Roy; Aral, 2018; Molina et al., 2021). The discussions about fake news and disinformation are concentrated in Module 4 – Media and Information Literacy Competencies to Tackle Misinformation, Disinformation, and Hate Speech: in Defense of Truthseeking and Peace in the Unesco document.

Both documents present disinformation as the deliberate intent to deceive. DigComp points out that disinformation hinders the full exercise of citizenship and relates disinformation and misinformation to elucidate the concepts through comparison: “[...] disinformation is intentionally created and disseminated false information to deceive people, while misinformation is false information regardless of the intention to deceive or mislead people” (Vuorikari; Kluzer; Punie, 2022, p. 64). It should be noted that disinformation encompasses different aspects of misleading, imposter, fabricated, false connections, out-of-context, manipulated content, conspiracy theories, and myths (Grizzle et al., 2021) in MIL. Both documents relate the phenomenon to the “infodemic,” highlighting how widespread disinformation has impacted citizens during the Covid-19 pandemic, especially through social media, characterizing it as a “disempowering” element.

Category 2 of analysis, as indicated in Chart 1, encompasses recommendations for assessing information in non-traditional information environments and was found in both analyzed documents. The inferences within this category focus on Dimension 1 – Information and Data Literacy, 1.2 "Evaluating data, information and digital content" of DigComp. The document emphasizes the need to understand that online environments contain all kinds of

information and content, including misinformation. They recommend verifying multiple sources on a topic to identify hidden perspectives, biases, and prejudices in certain information and data sources, acknowledging that these are influenced by numerous factors. They also highlight the need to evaluate search results and social media activity flows before consuming and/or sharing them. To accomplish this, it is proposed to identify their origins, find authorship or information sources, distinguish between factual reporting and opinion, and determine if the content is true or has limitations driven by economic, political, or religious interests (Vuorikari; Kluzer; Punie, 2022, p. 12), since social transformations, along with new technological challenges, influence information practices (International Federation of Library Associations And Institutions, 2017). DigComp recommends that citizens be aware that Artificial Intelligence algorithms may also have biases, encompassing commercial or political messages, and/or may include stereotypes that cause the user to remain in social bubbles (Vuorikari; Kluzer; Punie, 2022, p. 12). It also suggests questioning the quality of online information and the purposes behind disseminating and amplifying misinformation, while being attentive to “clickbait” that, through enticing headlines which often do not match the content's theme, lead the reader to sponsored or undesired content (Vuorikari; Kluzer; Punie, 2022, p. 11-12, our translation). It is understood that the principles suggested in the document guide information evaluation and usage based on the subject's criticality, aiming to develop a multifaceted set of technical and cognitive competences in individuals for the simultaneous use of technologies and their social impacts (Silva; Behar, 2019).

MIL presents inferences 2A and 2B (Chart 1), primarily in Module 3 – Research, Information Cycle, Digital Information Processing, Intellectual Property, where the information assessment process is described as critical and aims to verify the originality, reliability, and relevance of information across diverse media. This assessment includes aspects of timeliness, subject, and coverage, where one must consider elements such as:

authorship, title, publisher, location, date, index, and bibliography. These elements exist in different forms, such as newspapers, magazines, yearbooks, proceedings, web sources (websites, media, lectures, tweets, etc.), and other types of sources like patents, standards, and media messages (Grizzle *et al.*, 2021, p. 127, our translation).

In this context, the key element of Information Literacy is highlighted, fostering knowledge and skills related to ethical access, evaluation, and use of information based on critical thinking (Carlsson, 2019; Belluzzo; 2021), highlighting the relationship between information and power, traditional media, and social networks through questions such as "What is the identity of the person(s) behind the generated information? Is knowledge of this information important, and why?" (Grizzle *et al.*, 2021, p. 132, our translation). The evaluation process is also grounded in assessing information value, where individuals are invited to ponder questions related to costs associated with traditional media, such as newspapers and television, as well as non-traditional media like social networks and instant messaging apps, along with considerations about storage, retrieval, and use expenses. It is also emphasized that the value of information goes beyond cost, requiring reflection on the benefits it can generate and the potential consequences of the availability or unavailability of specific information on an individual and collective level.

Regarding the investigation of skills, knowledge, and attitudes presented by documents directly related to combating fake news and misinformation, category three (Chart 1) was proposed, namely: A- Systematized strategies that relate skills, knowledge, and attitudes specifically to combating misinformation and fake news; B- Systematized strategies that relate skills, knowledge, and attitudes to recognizing aspects of fake news manipulation; and C- Systematized strategies that relate skills, knowledge, and attitudes to the use of fact-checking tools. The analysis revealed that DigComp does not present corresponding systematized strategies for the inferences proposed in this category, but it highlights aspects about the context in which information circulates and factors to be considered by information consumers. These

are knowledges that individuals should be familiar with to navigate the current information universe, as observed in Chart 2:

Chart 2. Notes from DigComp for combating disinformation and fake news

Dimension	Recommendations
Dimension 1 "Information and Data Literacy"	It is recommended to "[...] ask critical questions to assess the quality of online information." And to pay attention to "the purposes behind the dissemination and amplification of disinformation." (p. 12, our translation, emphasis added).
	"Understand that online environments contain all kinds of information and content, including disinformation." They also warn that although "a topic is widely reported, it does not necessarily mean that it is accurate." (p. 12, emphasis added)
	"Consider transparency when handling and presenting data [information and digital content] to ensure reliability and identify data [information and digital content] that are expressed with underlying motives (e.g., unethical, profit, manipulation) or in a misleading manner" (p. 14).
Dimension 2 "Communication and Collaboration"	Encourages "Knowing how to flag or report misinformation for fact-checking by organizations and to social media platforms to prevent it from spreading" (p. 18).
Dimension 5 "Problem-Solving"	"Knows how to talk about the importance of recognizing fake news to others (e.g., elderly, young people), showing examples of reliable news sources and how to differentiate between the two." (p. 49)

Source: Adapted by Vuorikari; Kluzer; Punie (2022).

The document recommends that "critical questions" be raised about the quality of information; however, it does not provide examples of these questions or establish criteria for individuals to formulate such inquiries themselves, nor does it define parameters for information quality. It indicates a specific need for understanding the objectives of disinformation but does not discuss the manipulation process and its various purposes, which are only briefly mentioned.

An important point highlighted in DigComp is that the popularity of content does not necessarily make it true, given the presence of echo chambers on social media and the dissemination of fake news through platforms like WhatsApp groups. Thus, it becomes evident that ICTs enable innovations in information use, but online environments encompass a heterogeneous range of content that extends beyond form, encompassing a broad spectrum from factual information to fake news. The document provides only specific guidelines throughout, which do not address the complexity of actions, knowledge, and skills necessary for citizens to be capable of recognizing and combating disinformation and fake news.

Module 4 – Media and Information Literacy Competencies to Tackle Misinformation, Disinformation, and Hate Speech: in Defense of Truth-seeking and Peace in MIL, covers two of the three inferences proposed in Category 3 (3A and 3B). The document prefers the term disinformation and discourages the use of the term "fake news," but it can be inferred that it includes issues related to false news. Initially, theories and concepts related to truth are explored to develop strategies to combat disinformation, characterizing it as a tool of manipulation:

[...] identify and discuss various real-life examples of truth-seeking and conflicting perspectives. Think about historical accounts of certain well-known events. Furthermore, consider the role of women in history and/or their contribution to the independence of various countries of choice. (Grizzle *et al.*, 2021, p. 151).

It is pointed out that it is necessary to study cases and examples of false/misleading content, employ a question-based approach that uses information from different sources in research, and analyze information based on CoInfo fundamentals (Grizzle *et al.*, 2021, p. 154-155). A recommended strategy is based on hate speech verification, although it does not necessarily correspond to disinformation: "[...] it is also the case that expressions of hate and

hostility are often laden with false and misleading content" (Grizzle *et al.*, 2021, p. 155). The document includes some questions for using fact-checking tools: "Can this statement be verified/fact-checked? Why or why not? If it can be verified, how can it be done?" (Grizzle *et al.*, 2021, p. 162).

To guide the fact-checking process, citizens are encouraged to use their social media to expose and report misleading information and to encourage others in their circle to do the same, but no guidelines are provided for using these tools. For example: "Use social media to expose and report wrong information. Share fact-checking websites to help your peers do the same. This way, you become a reliable source and leave MIL footprints for others to follow" (Grizzle *et al.*, 2021, p. 268).

Both frameworks, DigComp and MIL, offer a set of conceptual, pedagogical, and strategy-action references that provide guiding elements for the integration of different competencies required for individuals in the 21st century. The umbrella term concept, which permeates both documents, enables the concepts of Information Literacy, Digital Literacy, and Media and Information Literacy to be worked together, as well as related to other competencies.

The use of information in digital environments, especially on social media, instant messaging apps, and ICTs, further highlights the need for lifelong learning in information processes, media, and technologies. Fake news and disinformation are complex phenomena that must be discussed and combated based on complex perspectives such as CoInfo, Digital Competence, and Media and Information Literacy.

6 CONCLUSION

Undeniably, digital and media platforms, as well as social networks, instant messaging apps, and a variety of intelligent technological solutions, have created informational environments that, on the one hand, open up a new cosmos of possibilities for Education, give voice to social minorities, and favor collaborative knowledge construction. These non-traditional informational environments host vast and diverse content that includes misinformation and fake news, hate speech alongside factual information, entertainment, propaganda, memes, and more, shaping this landscape as extremely complex. This complexity underscores the need for learning verification strategies that go beyond traditional considerations of information source type, author, timeliness, and content approach. The convergence of educational action movements focused on information, media, and digital devices can be an alternative for identifying and combating fake news and disinformation by providing tools, knowledge, and skills that sharpen individuals' analytical and proactive approach to information.

The guidelines and strategies presented by the documents are complementary and contain similar aspects. This is because, in addition to the convergence of competencies, information professionals can use both documents to adapt them to the reality in which they operate, utilizing the DigComp framework for CD with structured AMI activities, and the more detailed content on formal and informal lifelong learning education provided by MIL.

It is essential for information professionals to be attentive to discussions about disinformation and fake news and to relate, understand, analyze, and critique the available references so that they can prepare users to navigate non-traditional informational environments through strategies grounded in skills, knowledge, and actions that ensure legitimate and equitable social participation for all individuals.

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