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Education for Democracy in the Digital Age: Judging and Reacting to Misinformation[1]

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Abstract. The article provides a comprehensive analysis of the socio-economic determinants influencing the ability to detect misinformation and the likelihood of its sharing across four European countries: Germany, Ireland, Poland, and Spain. Our findings reveal significant variations in media literacy and sharing behaviors influenced by demographic, ideological, and social factors (Montolio & Riambau, 2025). The findings underscore the complexity and potential biases associated with political information. Our results also have significant implications for understanding the dynamics of information spread on social media. The tendency to share fake or sensational news more than true news underscores the challenges in combating misinformation (Montolio & Riambau, 2025). Misinformation and disinformation affect all subject areas of formal education. Therefore, it should be conceived as a transversal and iterative task across all subject areas, so that the judgment of information forms part of the digital behavior patterns of all citizens.

Keywords: *citizenship education, information literacy, disinformation.*

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Intruduction

In the initial phase of the DEMOCRAT project, a competence framework for Responsible Democratic Citizenship (RDC) was developed (Krüger et al., 2024), which encompasses four key competences: inclusive participation, deliberation, judgement (of information), and democratic resilience.

The competence of 'information judgement' is closely associated with digital competence as defined in the European Union's (EU) 'Key Competences for Lifelong Learning' (EU 2018). In this context, it is also pertinent to mention the concept of media and information literacy as defined by UNESCO (Frau-Meigs, 2023). In the following sections, both concepts will be referred to as 'digital competence', in accordance with the terminology used by the EU.

The DEMOCRAT project posits that the teaching of digital competences, as well as civic education, should be a task for all primary and secondary education centres and Vocational education and training centres in the EU Member States. The objective is to equip students with the requisite competencies to thrive in a digitalised society. Digital competence and civic competence are essential for all nation-states. Their concrete outline depends on the configuration of the respective nation-state. For example, the Chinese conceptualisation of civic competence differs from the interpretation prevalent in the EU member states.

Accordingly, the DEMOCRAT project has sought to establish a set of fundamental competencies for responsible democratic citizenship, which can serve as a reference for democracy education in liberal democracies. The capacity to judge information obtained through digital or analogue channels is considered a key competence in any democratic society. In light of the above, the DEMOCRAT project has incorporated the capacity to 'judge' within its competence framework.

In relation to the competence judgment of information, and within the DEMOCRAT project, Montolio & Riambau (2025) conducted an online experiment on misinformation in 2023/2024 among adults in four of the six countries in which the project is being carried out. The countries in question are Germany, Ireland, Poland, and Spain. Their main results of the experiment are summarised in this article.

Before presenting the findings, the current academic debate on the influence of the internet, digital platforms, and misinformation on democratic processes will be briefly reviewed. This provides the context for the online experiment. After the presentation of its results, an outline of the relevance of the competence 'judging information' and of education for democracy will be provided. The results of the experiment demonstrate that, in addition to the instrumental competence aspects of assessing information, social aspects such as critical thinking and ethical attitudes are particularly important when responding#_ftn2 to information (see Geers et al., 2024).

1. Terminological questions

It is first necessary to provide a clarification of the understanding of the three terms that have been used in the public debates: misinformation, disinformation and misinformation. The High-Level Group of the European Commission (EC 2018a) considered the term 'fake news' to be misleading and therefore inapplicable in this context. Instead, the term 'disinformation' is recommended to be used.

In line with the definition set out by Persily & Tucker (2020), misinformation is here defined as information that is "*that contradict or distort common understandings of verifiable facts*". In accordance with the definition proposed by Sato et al. (2023), disinformation can be conceptualised as a subcategory of misinformation, characterised by the fact that it is intentionally disseminated.

The European Commission adopted a more comprehensive definition put forth by the High Expert Group: "Disinformation is understood as verifiably false or misleading information that is created, presented and disseminated for economic gain or to intentionally deceive the public, and may cause public harm" (EC 2018b). The definition encompasses not only the distribution of false information, but also its production. The second part is the causing of public harm, which introduces a second variable that is difficult to define and to measure. Accordingly, we limit our consideration to the initial portion of the definition: Disinformation is understood as verifiably false or misleading information that is created, presented and disseminated intentionally.

The defining factor that distinguishes misinformation from disinformation is the element of intentionality (Fallis, 2015). Nevertheless, identifying intentionality is challenging since it also requires awareness of the individuals and organisations, who disseminated the misinformation, and that the information is, in fact, false. This signifies that the primary reference should be misinformation that is circulating off- and online, with the exception that the source of the misinformation can be identified with a high degree of certainty. For this reason, we will employ in the following the term 'misinformation', which includes disinformation.

It is important to emphasise that mis- and disinformation are not novel phenomena; rather, they persist as a constant feature of modern societies. Similarly, to the impact of the printing press invented by Gutenberg on the dissemination of disinformation for the persecution of witches, the destruction of the order of the Knights Templar or the persecution of Jewish People, to give only few examples, the advent of the Internet act as an accelerator of the dissemination of misinformation and disinformation. The algorithms of digital platforms also use emotional and moral information to increase information traffic and economic benefits, thereby promoting the widespread dissemination of such information (Brady et al., 2020; Weeks, 2023).

2. Policy challenges and envisaged changes

The rise of misinformation on social media platforms has posed a significant threat to informed public discourse and democratic processes (Reglitz, 2022; McKay & Tenove, 2021; Silva & Proksch, 2021). The ability to accurately classify and identify misinformation is crucial in mitigating its adverse effects. Indeed, the interplay between scientific knowledge, democratic debate, and the proliferation of esoterism and misinformation has emerged as a critical area of study.

The advent of social media has significantly altered the landscape of information dissemination, creating both opportunities and challenges for public discourse (Lazer et al., 2018). "Scientific knowledge, rooted in empirical evidence and rigorous methodology, serves as a cornerstone for informed democratic debate. However, the rise of esoterism and misinformation poses a threat to this ideal, often undermining rational discussion with unverified and misleading information. Social media platforms, while democratizing access to information and amplifying diverse voices, have also become fertile ground for the spread of misinformation. The algorithms that drive these platforms often prioritize engagement over accuracy, leading to the viral spread of content that can distort public understanding and erode trust in scientific institutions and, hence, affecting the process of creating individuals' opinions on most relevant issues, such as the role of democracy in our societies" (Montolio & Riambau, 2025).

„This dynamic creates a paradox: the same technologies that enable widespread access to scientific knowledge can also facilitate the proliferation of esoteric beliefs and misinformation. The consequences of this phenomenon are profound, impacting public health, environmental policy, and political stability. The COVID-19 pandemic, for example, has starkly illustrated the dangers of misinformation, as false claims about the virus and vaccines have circulated widely, sometimes with deadly consequences" (Montolio & Riambau, 2025). Similarly, climate change debates are frequently muddied by pseudoscience and denialism, hindering effective policy responses (see e.g. Clarke, 2024; Dahms, 2022; Moreno Olmeda, 2024; Pennycook, 2022; Pongiglione & Martini, 2022)

Human judgment in identifying misinformation is influenced by various demographic characteristics, including age, education, cultural background, and political affiliation. These factors affect how individuals perceive and classify news content, with studies showing that older adults, those with lower digital literacy, and individuals with strong political biases are more susceptible to believing and sharing misinformation (Guess et al., 2019; Pennycook & Rand, 2019). Understanding these demographic influences is crucial for developing effective strategies to combat misinformation.

Previous research has highlighted the varying degrees of susceptibility to misinformation across different demographic groups. For instance, older adults and individuals with lower levels of digital literacy are generally more prone to believing and sharing

misinformation compared to younger, more digitally-savvy populations (Montolio & Riambau, 2025). Additionally, political biases can affect the interpretation of news, with individuals more likely to accept information that aligns with their pre-existing beliefs (Allcott & Gentzkow, 2017).

Geers et al. (2024) proposed a framework to analyse the engagement of people in misinformation. They distinguished four stages: source selection, information selection, evaluation, and reaction. Although the stages seem to be chronological, the reality is that it is an iterative and not chronological process, in which a person can switch from one stage to another (Table 1).

Table 1

Stage of misinformation engagement

Stage	Description	Behaviour examples	Target
Source selection	Curating the sources of the online information environment	Visiting a news website, following an account on social media	Platforms and information suppliers (incl. other users)
Information selection	Choosing what information to consume or ignore	Scrolling through a social media news feed, reading a headline, clicking on an article	Specific pieces of information
Evaluation	Evaluating the accuracy of the information and/or credibility of sources	Reviewing the information for consistency with memory, leaving a website to vet it and its information (lateral reading	Specific sources or pieces of information
Reaction	Judging whether and how to react to the information	Clicking a "share" button, commenting on a post	Specific pieces of information

Source: Geers et al. (2024)

Montolio & Riambau (2025) have conducted a large online survey across four European Union countries (Germany, Ireland, Poland, and Spain) to study how the socio-economic determinants of their citizens condition their ability to detect false headlines and their likelihood of sharing them using social media. Additionally, they also analysed the impact of attitudinal and ideological variables on the probability of detecting (and sharing) misinformation. The survey focuses on the stage evaluation and reaction of the citizens on the reception of information. Evaluation refers to the action of the citizens to evaluate the reliability and accuracy of received data and information. Reaction refers to the question, what the citizens will do after having received data and information. It affects the question, why, when and how they will share data and information. Particularly interesting is the question, how they will act when they have

identified misinformation, which includes at least three possible reactions: sharing, not sharing, denouncing publicly that it is misinformation.

"The primary motivation for this study is to explore both the determinants of believing and sharing misinformation of people from diverse demographic backgrounds to obtain insight information that can be used for researchers and policy makers to combat the negative impact of misinformation. Results point to a significant role of some socio-economic and political variables in determining both the probability of detecting and sharing misinformation on social media; results also show interesting country heterogeneity. Political headlines are more likely to be misclassified, highlighting the influence of political biases. Respondents are significantly worse at classifying news when it involves political content, which underscores the challenge of overcoming ideological biases in media consumption. We highlight the importance of fostering digital literacy, especially among young and more vulnerable individuals, to promote responsible democratic citizenship" (Montolio & Riambau, 2025).

3. Misinformation and Education for Democracy

The impact of the Internet (and its contents) on democracy remains an open question. In a recent study, Lorenz-Spreen et al. (2022) examined the influence of digital media usage on democratic processes. Their analysis was based on a comprehensive review of 496 articles, selected from a diverse range of geopolitical contexts. The authors adopted a broad definition of digital media, encompassing aspects from internet access to the use of social platforms. The study reveals that there is currently no definitive evidence to suggest that the Internet has a positive or negative impact on democracy. The impact of the internet on democracy is contingent upon the variable in question such as political knowledge, participation, trust in political institutions, polarization, populism, respect for the rights of minorities, and diversity in public opinion. Furthermore, the evaluation is contingent upon the political stance. The intensification of populism and polarization could be perceived as beneficial by political forces that have adopted such a strategy of expressing opinions in the public sphere without aligning with the extreme right or left. However, this approach may potentially erode the foundations of pluralist democracy.

In democratic countries, according to the Liberal Democracy Index, the evidence clearly indicates that the massive use of digital media increases political participation in liberal democracies[2]. The impact on political knowledge and the diversity of opinions is less clear, although studies tend to indicate a positive effect. On the negative side, there has been a reduction in trust in democratic institutions, an increase in

[2] See Lelkes (2020); Kleinberg & Lau (2021) and Lee & Xenos (2022). For the general positive impact of the digital media on political participation see Boulianne (2020).

populism and polarization, as well as an increase in misinformation, discrimination against minorities (e.g. homophile) and hate speech. The results indicating this danger is consistent across all methods.

The issue of misinformation and mis-data has been a topic of discussion for decades. It is thought that significant political misinformation may influence the political orientation of the population and, subsequently, the outcome of elections. "However, there is a notable absence of studies that analyse its impact on democracy. A recent study by Sato et al. (2023) addresses this gap by analysing the impact of misinformation and manipulation on political systems, distinguishing between authoritarian and democratic regimes. The findings indicate that misinformation and disinformation have a detrimental impact on the quality of democracy, regardless of the type of regime. Conversely, in authoritarian regimes, disinformation is also employed as a tool for authoritarian government propaganda, serving to maintain the regime and reducing the probability of democratization" (DEMOCRAT Project, 2024).

"In contrast to autocracies, the presence of disinformation in democracies has been observed to result in a heightened level of political polarization among those who believe in false information tend to gravitate towards illiberal or anti-democratic movements, while those who do not believe in false information and tend to align themselves with democratic movements. This results in higher levels of mobilization on both sides, which in turn makes the outcomes less predictable" (DEMOCRAT Project, 2024). Sato et al. (2023) cited the example of Brazil, where the illiberal trend was reversed due to the strong mobilization of the democratic civil society (see also Tomini, Gibril, & Bochev, 2023).

In summary, the advent of the internet and the proliferation of digital platforms have transformed the landscape of public opinion, leading to a diversification of voices and the reduction of the effectiveness of the mechanism to filter mis- and disinformation in the arena of public opinions. In the light of the findings of the systematic literature reviews of Lorenz-Spreen et al. (2022) and Sato et al. (2023), it is hard to defend that the massive use of the Internet has been beneficial for liberal democracies. Sato et al. (2023) show the negative impact of mis- and disinformation on liberal democracy.

But as Jungherr & Schroeder (2021) have emphasized that it is a limited approach to look only on the Internet as it is the interplay between the digital communication means and the conventional mass communication means which has produced the change in the arena of public opinions. In relation to its impact on the liberal democracies, the resistance to change should be added. The changes in the arena of public opinions also require a reflection on the democratic processes, how they should adapt to the digital age.

4. Survey design and data

The survey in Montolio & Riambau (2025) consisted of two waves administrated across 12 days. In the first wave, respondents were told about the two waves of the survey and were presented with the survey instructions. Respondents were told that they would see a series of headlines that could be true or false. Their task was to i) evaluate the likelihood that the headline was true/false using a slider with a probability ranging from 0% to 100%; ii) state whether they would share the news on social media using a radio button with the options [Yes, No]; and iii) assess whether the headline would help/harm the current government if it were true (Montolio & Riambau, 2025).

In the first wave, respondents evaluated ten headlines. The news and their order were randomly assigned at the respondent level. To avoid any formatting effects, the survey randomized the wording of the questions to respondents such that respondents were asked for the likelihood of the headline being either true or false and asked whether the news would help or harm the government if true. The formatting was randomly assigned to each respondent at the beginning of the first wave. In the second wave, respondents were asked to evaluate eight headlines in the same way as in wave 1 and then asked to respond to socioeconomic and political inclination questions. Respondents did not receive any feedback on the veracity of the headlines until the end of the second wave. The survey was conducted in four European countries: Germany, Ireland, Poland and Spain. All survey documentation was translated into the four relevant languages and some questions were country specific (Montolio & Riambau, 2025).

In the survey, Montolio & Riambau (2025) use a total of 90 different headlines per country. 86 headlines for all four countries and 4 headlines that are country specific. Of the 90 news headlines per country compiled, 50% were classified as Pop/Culture and 50% as Political. Therefore, they also analyse the ability to detect fake headlines and the likelihood of sharing them using social media depending on the contents of the headline. The survey was run by YouGov between July 23th and September 3rd, 2024, across Germany, Spain, Ireland, and Poland. In total, 806 participants took part in the first wave, with 749 adults participating in both waves.

The survey also collects relevant information from participants that can be grouped in four broad types: socio-economic (gender, age, income, employment and education); ideology (extremism, feminism too far and climate change); engagement with democracy (fair elections and political disengaged) and trust/use of social media (social networks, trust newspapers, trust misinformation), (Montolio & Riambau, 2025).

5. Evidence, analysis and results

This report focuses on two main outcomes from the analysis conducted by Montolio & Riambau (2025) with the survey data collected: the probability of correctly assess-

ing whether news is true or false and the probability of sharing news on social media. First, they examine who is more likely to correctly assess whether news is true or false. They do not find a difference on whether individuals are better at correctly classifying true or false headlines. On average, individuals are good at correctly identifying if a headline is false or true: the average accuracy of respondents is 68.4%, which is not a minor result. In this line, it is remarkable to see that respondents are significantly worse at classifying news when this is of political content. This suggests that most misclassifications are likely driven by political biases and preferences. Results also show that the attitude of respondents to misinformation has a significant and negative effect on the ability to classify headlines, a result that seems consistent: those individuals that in the past admit to having trusted misinformation are not as good as other individuals in detecting the nature of the headlines they face (Montolio & Riambau, 2025).

Moreover, Montolio, & Riambau (2025) find that those individuals that believe that elections are held freely correlates positively with their ability to correctly classify news. When examining the factors that influence individuals' accuracy in identifying the veracity of news headlines, they obtain that the probability of correctly classifying news headlines is 64.1% and this is independent of the nature of the headline. Therefore, in general, survey participants can correctly classify headlines; and Irish people are above average (i.e., better) in doing so. Our results suggest that respondents do not significantly differ in their ability to classify true headlines compared to fake ones. This suggests that the inherent characteristics of the headlines themselves do not strongly influence the accuracy of classification. However, political headlines are notably more challenging to classify correctly, indicating that political biases and preferences may play a significant role in misclassification (Montolio & Riambau, 2025).

Older individuals are generally better at correctly classifying news headlines. This positive correlation between age and classification accuracy may be attributed to greater life experience and a more developed sense of scepticism towards dubious information, while they do not find significant impact of gender, income, or employment status on the ability to classify news correctly. Regarding ideological and attitudinal factors, they find that respondents who believe that elections are held freely in their country, and believe in democracy, are more likely to correctly classify news headlines. This positive correlation indicates that trust in democratic processes may be associated with better media literacy. Interestingly, individuals who have a negative attitude towards misinformation are better at correctly classifying headlines; and those more prone to sharing news on social media are worse at identifying the correct nature of headlines (Montolio & Riambau, 2025).

Second, Montolio, & Riambau (2025) assess to what extent participants would be willing to share the headlines they have read on social media, and what characteristics could explain their willingness to do so. A relevant result of our research is the positive correlation between true news and the likelihood of sharing the news. This result is in

contrast with the results reported by Serra-Garcia & Gneezy (2021). Spaniards seem to be less willing to share news on social media, and this result is not affected by the nature of the news headline (Political or Pop/Culture). When analysing the probability of sharing news on social media they find more socioeconomic and political characteristics of survey respondents to be relevant for that decision. Older individuals seem less likely to share news online, which suggests that older adults may have different motivations or levels of digital literacy that influence their propensity to share news. Similarly, results show that females are generally less likely to share news on social media compared to males. This gender difference in sharing behaviour could be attributed to varying levels of engagement with social media platforms or differences in risk perception regarding the spread of misinformation. Regarding more economic variables they find that both higher income and low-income levels seem to be less willing to share news compared to middle-income individuals. I.e., middle-income individuals are those seemingly more active when it comes to sharing. Moreover, they obtain a significant result for employment status —observing that unemployed individuals have a more active sharing behaviour than those that work (either full or part time). The particular level of education attained does not seem to significantly influence the sharing behaviour of individuals (Montolio & Riambau, 2025).

With regards to political and ideological factors, the authors find that those individuals at the extremes of the ideological spectrum tend to share more headlines on social media. This result adds evidence to studies such as Hopp et al. (2020) that shows that sharing counter-media content on Facebook is positively associated with ideological extremity, while it finds no significant relationship between ideological extremity and counter-media sharing on X (Twitter). Moreover, individuals who have more trust in traditional media outlets (newspapers) do share more news headlines, potentially as a way to reinforce their trust in these sources. Related to this result, Talwar et al. (2019) find that high levels of online trust are positively associated with sharing misinformation, and negatively associated with authenticating news before sharing. Similarly, those individuals that admit that have (mistakenly) trusted misinformation are also more prone to share information on social media, which is an important result to consider in our context (Montolio & Riambau, 2025).

The experiment of misinformation show that the majority of adult persons are able to detect misinformation and they are not willing to share it. Only a minority of this group competent to identify misinformation is willing to react against the source of mis- and disinformation. A second group of people are those who are competent to identify mis- and disinformation and are sharing them with others on the internet for a variety of reasons (Montolio & Riambau, 2025). The research of Altay et al. (2020) suggest that the harm of social and personal reputation could be a main factor to reduce the probability that identified misinformation will be shared without marking it

as misinformation[3]. This is contingent upon the reaction of the receptors of the information, who have been competent to identify it as mis- or disinformation. The third group of people, who are sharing the misinformation without having it identified it as such, should learn to evaluate better information, but also its source.

The study underscores the importance of understanding the nuanced interplay between socio-economic factors and media literacy. As misinformation continues to pose a threat to informed public discourse and democratic processes, these insights are crucial for developing effective strategies to enhance public understanding and resilience against misinformation. Future research should explore the impact of educational interventions and policy measures tailored to different demographic groups to mitigate the spread of misinformation. By shedding light on the determinants of misinformation detection and dissemination, this research contributes to the broader effort to safeguard democratic values and promote a well-informed citizenry in the digital age (Montolio & Riambau, 2025).

6. Implication for the competence: judgment of information

The results of the experiment provided a multifaceted overview of the factors that influence the correct judgement of headlines. Across countries, they show that age and income level, but also political interest, have a positive effect on media literacy. The results emphasise the complexity of media literacy, which is influenced by a network of demographic, ideological and social factors. These findings are important for understanding how misinformation works, but also for strategies to improve resilience to misinformation.

"The results of the experiment together with the existing literature on misinformation and disinformation provided information for the design of the learning process on the competence of information judgement as defined in the DEMOCRAT project. The assessment of information should not only refer to the evaluation of the reliability and accuracy of the information sources and information itself, but also include the reaction of individuals to identified mis- or disinformation. This is in line with recent research on this topic", (DEMOCRAT Project, 2024).

In their systematic literature review, Aimeur et al. (2023) differentiate between techniques based on human input and those based on artificial intelligence. The human-based technique includes techniques such as crowdsourcing, which relies on collective efforts to detect misinformation (Pennycook & Rand, 2019; Micallef et al., 2020; Tchakounté et al., 2020) or fact-checking, which follows the journalist procedure to verify trustworthy information (Vlachos & Riedel, 2014; Chung & Kim, 2021; Nyhan

[3] Altay (2020) mentioned as possible reasons which conduce people to share information, which they have identified as false: entertainment or amusement, creating chaos or political partisanship.

et al., 2020). Both techniques are time-consuming and rely on human knowledge and expertise (Aimeur et al., 2023). The effectiveness of such techniques is also constrained by the growing challenge of differentiating between false and authentic information. The advent of artificial intelligence (AI) has led to a significant increase in the potential for the creation of sophisticated disinformation and facilitates its dissemination to selected target groups. In reaction, AI is also used to develop application to detect and moderate disinformation (see Bontridder & Poullet, 2021).

Geers et al. (2024) identified several factors that can impact the quality of evaluation by individual internet users such as a lack of analytical thinking (Pennycook & Rand 2018), memory failures (Swire-Thompson et al. 2023), illusory truth through repeated exposure (Unkelbach et al. 2019), unreliable source cues (Briñol & Petty, 2009), and emotional (Baum et al., 2021) and worldview-related influences (Pennycook, 2021).

All information received by individuals elicits a response, whether it is ignored or accepted. Information received via conventional mass media prompts a variety of reactions, including commenting on news items with other individuals and writing letters to the editor. The Internet, digital platforms and online newspapers provide new avenues for engagement, including forwarding information, expressing approval through likes, posting comments and replying to blogs or articles.

Once misinformation has been identified, it is important to distinguish between three possible reactions: a) no reaction; b) informing the community that the information is misinformation; and c) sharing misinformation, despite being aware that it is incorrect. Geers et al. (2024) maintain that this is an uncommon occurrence. This is in line with findings of Grinberg et al. (2019); Guess et al. (2019); Nelson & Taneja (2018); and Osmundsen et al. (2020).

The research identified a number of motives for the dissemination of misinformation, including the signalling of group affiliation (Brady et al. 2020), self-promotion (Islam et al. 2021), and the inciting of chaos (Petersen 2023). Furthermore, the potential role of social media platforms in amplifying misinformation has been explored (Ceylan et al., 2023; Lindström et al., 2021).

Melchior & Oliveira (2024) conducted a systematic review of the motivations behind the sharing of misinformation on social media, based on 64 selected articles. The research revealed that intrinsic motivations are the most frequently cited in articles on misinformation. These findings indicate that users share misinformation with the belief that it is reliable or accurate. The next most common reason for sharing misinformation is for entertainment purposes, although the evidence in this regard is not entirely conclusive. Some studies have identified a correlation between amusement and the sharing of misinformation (Jahanbakhsh et al., 2021; Acerbi, 2019; Tandoc, 2019; Tandoc et al., 2018; Waruwu et al., 2020); while other studies have not observed this association (Lee & Ma, 2012; Thompson et al., 2020).

Other extrinsic motivations studied include self-promotion and detecting positive associations. Additionally, followers of conspiracy theories tend to disseminate misinformation, as well as individuals with a strong political ideology. This phenomenon appears more prevalent among radical right-wing followers in the United States, including Republicans, compared to left-wing followers, including those affiliated with the Democratic Party (see Freiling et al., 2021; Pereira et al., 2021).

The research of Altay et al. (2020) focused on the reverse question, why people do not share misinformation. They conducted four experiments with a total of 3656 persons. They concluded that the main reason not to share misinformation is that it hurts their reputation. The reputation of a source, if an organisation or an individual, suffers by sharing misinformation. According to Slovic (1993) gaining reputation or being trusted requires time and effort, but it can quickly collapse. Transferred to misinformation, it signifies that the reputational costs of a misinformation are high compared to the reputational benefits of a correct information (Yaniv & Kleinberger, 2000). A single mistake can collapse the reputation (Rothbart & Park, 1986) (Table 2).

Table 2

Key competences of responsible democratic citizenship

	Key competences of responsible democratic citizenship		
	Knowledge	Skills	Attitudes
judgement	Being competent to judge what is reliable information and what is not, knowing how to assess the reliability of data received and interpret it and react on dubious information or misinformation		
	Being aware of tools for searching, finding information and assessing its reliability and veracity. Being aware of the social implication of sharing dubious information or misinformation	Ability to analyse the reliability of information and its veracity. Ability to react to detected dubious information and misinformation	Always ready to double-check the veracity and reliability of information. Being ready to react on dubious information and misinformation

Source: Krüger et al. (2024)

The recent research on individual evaluation of information and the reaction on detected misinformation shows a) the constraints of individual capacity to evaluate the reliability and accuracy of information, and b) the relevance of how the citizens react to dubious information and misinformation. This led to modifications in the description of the competence Judgment of information putting more emphasis on the reaction stage.

7. Implication for Education for Democracy

In today's digital age, the spread of false information and misleading content presents significant challenges to democratic societies. These issues not only influence the processes of public opinions but also undermine the fundamental processes of informed decision-making and the trust placed in reliable sources. The rapid dissemination of misinformation and disinformation, particularly through social media and digital platforms, calls for an educational response that prioritizes the development of critical thinking skills. Media and Information Literacy (MIL) plays a crucial role in empowering individuals to evaluate information and identify falsehoods, laying the foundation for a democratic culture grounded in informed citizenship (Alexander & Galina 2020). The corresponding term in the competence frameworks of the European Union is digital competences included in the Key competences for Lifelong Learning. It is further elaborated since 2012, with its last version DigComp 2.2 (Vuorikari et al., 2022). The Digital Competence Framework for Citizens. In the following we will use the term digital competence reference, referring also to MIL.

The DigComp 2.2. established five competence domains: Information and data literacy, Communication and collaboration, Digital content creation, Safety, and Problem solving. The new version of DigComp refers particularly to mis- and disinformation as a relevant issue, which digital competences have to address (Fig. 1).

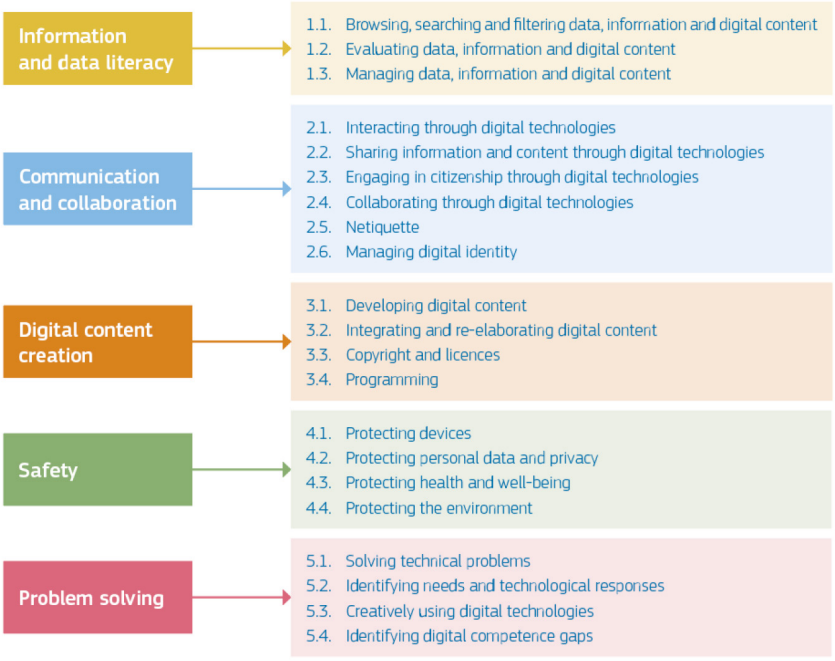

Fig. 1. The DigComp conceptual reference model. Source: Vuorikari et al. (2022)

In the first competence domain 'Information and data literacy', the sub-area 'Evaluating data, information and digital content' deals with the evaluation or determination of the credibility and reliability of information sources, data, information and digital content. This covers the phase of Evaluation defined by Geers et al. (2024) in their phase model.

The topic of 'sharing of mis-or disinformation' is only mentioned in relation to artificial intelligence (AI) and AI algorithms, which "can also have negative consequences (e.g. reproducing stereotypes, sharing misinformation)". Furthermore, it also addressed in the domain 'Communication and Collaboration' in the sub-area 'Sharing through Digital Technologies' as one of several skill elements the knowledge "*how to flag or report disinformation and misinformation to fact-checking organisations and to social media platforms in order to stop it spreading*". Therefore, DigCom 2.2 focuses primarily on technical aspects of digital skills and neglects to conceptualise the phase of reaction.

Both the experiment conducted by Montolio & Riambau (2025) and other studies show that the reaction phase is as important as the evaluation phase in preventing the spread of misinformation. Pennycook & Rand (2022) found that "*even when participants are quite good at distinguishing between true and false headlines (if they are asked to judge accuracy), this ability to discern truth from falsehood often does not translate to sharing*" (see also Pennycook & Rand, 2020; Pennycook & Rand, 2021; Epstein et al., 2020). In other words, the aspect of 'reacting to misinformation and disinformation' must be an integral part of learning the competence 'information judgement' as well as digital competences in general. This is also a consequence of the changes in the role of Internet users. They are no longer just consumers of information, but also producers and distributors of information, i.e. information prosumers.

Alexander & Galina (2020) argue along similar lines when they advocate the inclusion of digital literacy in educational programmes to promote critical thinking and to enable students to evaluate media messages and resist manipulation. This approach is also in line with the Council of Europe's Reference Framework for Democratic Culture (RCDC), which emphasises judgement of information as a core competence for democratic citizenship (Lenz et al. 2022). Judgement involves the critical evaluation of information, the understanding of different points of view and the ability to make informed decisions about whether and how to share information on this basis. These aspects are crucial to combat misinformation and build democratic resilience.

According to Dame Adjin-Tettey (2022), media literacy involves not only the ability to access information, but also the ability to make differentiated judgements about content. The results of her study show that the ability to distinguish authentic from misleading information is significantly improved through digital skills training. This considerably reduces the likelihood of dubious content being disseminated. The results underline the importance of incorporating the competence of 'judging information' into educational programmes in order to promote students' critical thinking and

judgement. This implies that 'judging information' should not be limited to technical aspects, which are the main focus of DigiCiom2.2, but should put in the fore social aspects such as critical thinking and ethical behaviour to reduce the sharing of dubious information or misinformation.

Armeen et al. (2024) mentioned different types of user-centred intervention such as debunking; inoculation interventions (see also Roozenbeek et al., 2020; van der Linden et al., 2017; Cook et al., 2017); informative interventions, and prescriptive interventions. Kozyreva et al. (2024) offered a tool of interventions, which is based on literature review. It mentioned nine interventions: (1) Debunking and Rebuttals; (2) Inoculation; (3) Media-literacy tips; (4) Source-credibility labels; (5) Warning and fact-checking labels; (6) Accuracy prompts; (7) Friction; (8) Lateral reading and verification strategies; and (9) Social norms (Believing and especially sharing false and misleading content)

Five of these interventions are focused on the evaluation stage (1–5), while the other four interventions (6–9) also include the reaction stage. Most of the interventions are primarily focused to technical solutions as, for instance, 'Source-credibility labels', which can be installed as an app in the browsers; 'Warning and fact-checking labels' used by some digital platforms as Twitter and Facebook, and Media-literacy tips, which has been implemented e.g. by Facebook.[4]

From a pedagogical perspective, the following interventions appear to offer the greatest potential:

- The inoculation approach involves exposing people to a diluted form of common misinformation and dis-information with the aim of strengthening their resilience against such type of information. It focuses primarily on the evaluation stage, although it may also prove effective in reducing the dissemination of misinformation and disinformation.

- Accuracy prompts asks persons (e.g. students) to evaluate the accuracy of headlines or other type of information, asking them later about the relevance to share or not to share the identified inaccurate information.

- Friction can be defined as "*any unnecessary retardation of a process that delays the user accomplishing a desired action*" (Tomalin 2023). The longer the retardation, the lower the probability that the action will be carried out. The learning process is designed to influence behavioural change, encouraging a pause between reading information and sharing it with others (see Fazio, 2020).

- Lateral reading and verification strategies is a strategy to evaluate the accuracy and reliability of an information by a range of techniques and methods (see Wineburg & McGrew, 2017). In education centres, such types of intervention "*suggest that targeted and explicit instruction in lateral reading can help people both assess credible information and identify misinformation*" (McGrew, 2024)

[4] Even if recent political events have induced Facebook to eliminate, in the USA, the fact checking tools previously in place.

– Social norms are shown in experiments as an effective mean to reduce the spread of identified misinformation. Andö et al. (2020) conducted an experiment involving 1.003 people. The experiment randomly introduced a social norm message warning for false information on the Internet and advised that responsible people reflect before sharing it. The result demonstrates that such a message reduces the sharing of misinformation. This is consistent with the findings of Altay et al. (2020) which indicates that the risk that the one's own social reputation will be hurt by sharing misinformation is one main reason not to share misinformation.

Particularly, the friction and social norm approaches advocated to always introduce a break between reception and sharing of information, giving time to reflect about the next action to be taken. This implies critical thinking as a fundament to evaluate information and to react. The systematic literature reviews by Ilomäki et al. (2023), Jiménez-Rojo (2020); Shyh et al. (2023); González et al. (2023) and Kerres (2023) emphasise the relevance of critical thinking for MIL.

The majority of reviews highlight the shortcomings of the current teaching methodologies and the dearth of resources in the domain of digital competence (see Dame Adjin-Tettey 2022), as well as in the area of critical thinking (see Chanda, 2017; Pötzsch, 2019; Haider & Sundin, 2022).

Shyh et al. (2023) provide a comprehensive overview of novel pedagogical approaches in the domain of MIL (see also Chanda, 2017; Pötzsch, 2019). It appears that practical teaching models which are less encapsulated than the usual ones and which consider all available teaching resources are, is an appropriate way forward. Participatory and collaborative approaches seem the most promising approaches to educate in digital competences (Fig. 2).

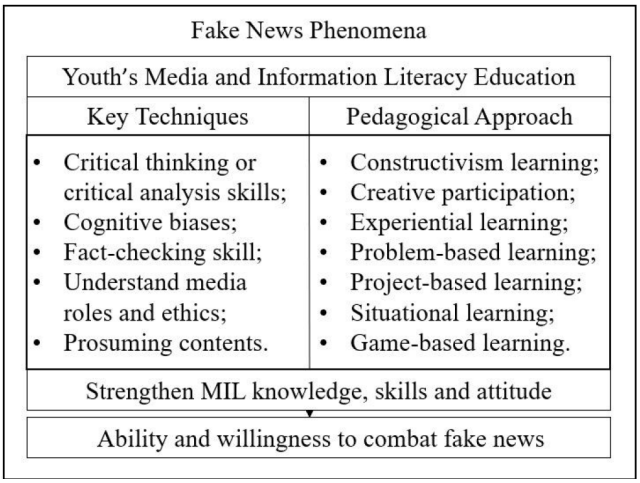

Fig. 2. Conceptual framework of MIL education to combat misinformation

Source: Shyh et al. (2023)

Similarly, the training of teachers in digital literacy is a key factor in the successful integration of information assessment. Jerome et al. (2024) point out that teachers need comprehensive digital literacy training to effectively counter misinformation and conspiracy theories in the classroom. The study shows that many teachers are unable to deal with these problems due to inadequate training. This leads to inconsistent and often ineffective strategies. This highlights the need for ongoing professional development to ensure that teachers are able to navigate the changing media landscape and support students in developing critical thinking.

Another important mean would be to create an infrastructure that allows pupils and students to actively engage in labs equipped with computers, internet access, video production tools, and software for analysing media content and creating digital media. These spaces enable students to learn about media bias, create content (like student newspapers or videos), and practice responsible digital citizenship which includes the issue of how to react to messages received in digital publics.

The following recommendations can be taken as a summary of the key points:

1) The evaluation of information should not be confined to the selection of information sources, the gathering of information and its subsequent assessment. It is crucial to recognise the importance of the reaction stage in the dissemination of misinformation and disinformation.
2) The ability to judge information, as well as digital competence in general, is not primarily a technical skill. It encompasses social aspects such as critical thinking, ethical behaviour and the ability to compromise for the common good of society, which is the ability to live together. This is not limited to political issues, but also has implications for other critical areas, such as cyberbullying.
3) In terms of the most promising approaches to teaching digital skills, Tan Huey Shyh (2023) identified a number of participatory pedagogical techniques, including constructive learning, creative participation, experiential learning, problem-based learning, project-based learning, situational learning and game-based learning.
4) It is recommended that the acquisition of the competence 'information judgement' should be conceived as an ongoing and interdisciplinary process. As mis- and disinformation affects not only political information but also a wide range of other social domains, including science, it is important to integrate this iterative task into all school subjects. The aim is to effectively counter misinformation, disinformation and conspiracy theories in classrooms. The search for information sources, the selection of information, the evaluation of information and the reaction to information are urgent tasks for all subjects taught in schools and universities, as the Internet turns all Internet users of all age groups into potential consumers of information. The information circulating on the Internet and via digital platforms is becoming increasingly fundamental for political and

social participation. Information and its quality are essential for the quality of democratic processes.

5) Studies revealed that many teachers struggle to address these challenges due to a lack of training. This leads to different and often ineffective strategies. It is therefore essential to strengthen this topic in teachers' education.

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Demokratijos ugdymas skaitmeniniame amžiuje: klaidingos informacijos vertinimas ir reagavimas į ją

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Santrauka

Straipsnyje pateikiama išsami socialinių ir ekonominių veiksnių, darančių įtaką gebėjimui atpažinti dezinformaciją ir tikimybe ja dalytis, analizė keturiose Europos šalyse: Vokietijoje, Airijoje, Lenkijoje ir Ispanijoje. Mūsų rezultatai atskleidžia reikšmingus medijų raštingumo ir dalijimosi informacija elgsenos skirtumus, kuriuos lemia demografiniai, ideologiniai ir socialiniai veiksniai. Išvados pabrėžia politinės informacijos sudėtingumą ir galimus šališkumus. Gauti rezultatai taip pat turi reikšmingų implikacijų siekiant suprasti informacijos sklaidos socialiniuose tinkluose dinamiką. Polinkis labiau dalytis melagingomis ar sensacingomis nei tikromis naujienomis pabrėžia iššūkius kovojant su klaidinama informacija. Misinformacija ir dezinformacija daro poveikį visoms formaliojo ugdymo dalykinėms sritims. Todėl tai turėtų būti suprantama kaip horizontali ir pasikartojanti užduotis visose mokymo srityse, kad informacijos vertinimas taptų visų piliečių skaitmeninio elgesio dalimi.

Esminiai žodžiai: *pilietinis ugdymas, informacijos raštingumas, dezinformacija.*

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