cogitatio

ARTICLE

Digital Resilience to Disinformation: From Libraries to Citizens

Nereida Carrillo [1], Marta Montagut [2], and Roberto Gelado Marcos [3]

[1] Department of Media, Communication and Culture, Universitat Autònoma de Barcelona, Spain
[2] Department of Communication Studies, Universitat Rovira i Virgili, Spain
[3] School of Humanities and Communication Sciences, CEU San Pablo University, Spain

Correspondence: Roberto Gelado Marcos (roberto.geladomarcos@ceu.es)

Abstract

Disinformation is a challenge facing democracies, most especially in the current context of "polycrisis," in which an "illiberal public sphere" endangers public debate fed by reliable data. Media and information literacy (MIL) has emerged as potentially one of the most effective ways to promote digital resilience to disinformation. According to UNESCO's first MIL law, libraries and their staff are key to the dissemination and implementation of MIL, since they can be the source of reliable information for all audiences. We analysed the preparedness, knowledge, and attitudes of Spanish librarians to disinformation and MIL by conducting a survey of 110 librarians prior to receiving training in the Media and Information Literacy Community Connections (MIL CC) project (2024–2025). The results show that 64.5% of our respondents had not previously received specific MIL training, although 75% were familiar with fact-checking tools and were able to detect manipulated or false information. However, the fact that over half of the responding librarians conceded that they had not organised any MIL activities for their community underscores the need to train and encourage librarians to actively engage with their central and crosscutting role in fostering MIL.

Keywords

digital resilience; disinformation; libraries; media and information literacy

1. Introduction

In the last two decades, the rise of disinformation—understood as "false, inaccurate, or misleading information designed, presented and promoted to intentionally cause public harm or for profit" (European Commission, 2018)—linked to populist and polarising discourses has responded to the search for simple answers to progressively more complex questions (Guerrero-Solé, 2025). In this regard, the concept of

"polycrisis" (Morin & Kern, 1999, p. 74) reflects a historical moment when economic, political, moral, and communication crises overlap. Since the economic crisis of 2008, it would seem that we have been in permanent polycrisis, caused chiefly by the Covid-19 pandemic and the wars in Ukraine and Gaza, but further aggravated by Donald Trump's rise to power in 2016 in the US and the Brexit campaign and corresponding media manipulation in the UK (Carrillo & Montagut, 2021a). In the ideological struggle reflected in contemporary populist discourse—especially that of the far right—lying with strategic intent to achieve all kinds of goals is a key disinformation tool.

As asserted by Bennett and Kneuer (2024), we are no longer dealing with a virtuous public sphere in classic Habermasian terms, but rather with an "illiberal public sphere." Citizens no longer seek reliable information in order to accordingly act politically, but instead seek discourse that reinforces their sense of belonging to a group, with the consequent greater homophily in the digital sphere resulting in greater political polarisation (Esteve-Del-Valle, 2022).

The preservation of democratic systems therefore depends on both contesting the drive for identity and ideological polarisation and addressing the many faces of disinformation, both by those who manage and distribute reliable information and by citizens in general. On the understanding that democratic systems are unviable if the public sphere is massively misinformed, authors such as Victoria-Mas (2021, p. 45) call for "democratic resilience," which encapsulates the essential concept of "digital resilience" in terms both of cybersecurity (Shandilya et al., 2024) and media and information literacy (MIL).

2. Disinformation: Aggravating the Polycrisis

Since the US presidential elections of 2016 and the Brexit referendum of the same year (both key milestones in the relatively recent social impact of disinformation), information disorders have led to countless academic efforts to shed light on the nature of disinformation and the best ways to counter its harmful effects. Spain is no exception, and both national and cross-national comparative studies in the field have been published in recent years.

As has happened in other geographical contexts, the impact of disinformation in Spain during the Covid-19 pandemic has attracted significant scholarly attention. Macarrón Máñez et al. (2023, p. 455), for instance, draw attention to how "social networks have been the perfect place to disseminate and viralise all types of fake news related to the Covid-19 pandemic." Apropos of their own research into disinformation during the pandemic in Spain, Salaverría et al. (2020), who categorised hoaxes according to their potential harms, warned that the excess of scientific information had exceeded what publishing houses themselves could cope with, and in many cases, research work was published without the reviews required for publications of this nature.

The imbricated nature of disinformation has boosted further categorisation efforts, such as by Paniagua Rojano et al. (2020), who specifically focus on defining the complex nature of electoral hoaxes. In their investigation of X (formerly Twitter) in relation to the Spanish national elections of 28 April 2010, they concluded that most hoaxes detected by fact-checkers predominantly came from social media and that the most frequent hoax was the false attribution of actions, i.e., saying that someone did something that they did not do (Paniagua Rojano et al., 2020, p. 140). In their analysis of Facebook Ads apropos of the same elections, Cano-Orón

et al. (2021, p. 225) highlighted "the difficulties in making a distinction between advertising, propaganda, and disinformation."

Other studies of disinformation in Spain include those by Blanco-Herrero et al. (2021), who investigated citizen perceptions of fake news in Spain, and by Gelado-Marcos and Moreno-Felices (2022), who, even before the pandemic, explored the widespread nature of disinformation's harmful effects. More recently, the Digital News Report has explicitly stated, regarding Spain, that "with disinformation becoming a topic in the political and media agenda and being used as an electoral weapon, media trust has fallen to its lowest level in the past decade (31%), affecting all selected news brands" (Sierra et al., 2025, p. 109).

In this context, numerous authors recognise MIL as an essential tool to curb disinformation and foster both critical thinking and a deeper understanding of the democratic system (López-González et al., 2023; Monreal Guerrero et al., 2017). An efficient and enduring answer to the disinformation-aggravated polycrisis requires better-informed and civic-minded citizens (Marta Lazo, 2018), and MIL is considered to be the most effective long-term solution (European Commission, 2018). Despite efforts at mitigation, polycrisis and disinformation will persist as problems that affect not only young people but also entire communities, due to their capacity to transform and adapt. For those reasons, MIL needs to be, as UNESCO (2023) points out, aimed at everybody and lifelong. Consequently, libraries, as a place to read, learn, and acquire knowledge outside of formal education, are the best loci for lifelong MIL, and librarians are the most indicated professionals to deliver MIL to their community.

3. MIL for Digital and Democratic Resilience

Interest in MIL, although not a new field of study, has greatly expanded in recent years. In the 1980s, Masterman (1996), Buckingham (2005), Martín Barbero (2002), and Livingstone (2004), among others, focused on developing a theoretical framework and knowledge corpus for what was referred to as "educommunication," "media education," or "media literacy." In the 1990s, the focus was primarily on critical understanding and responsible use of the mass media, with media literacy understood as the ability to access, analyse, evaluate, and create messages in a variety of ways (Aufderheide, 1993; Christ & Potter, 1998). As Haavisto et al. (2022, p. 257) explain, this approach "encompasses a set of practices and projects through which human actors plan and do teaching in formal settings for various types of learners, and it also covers informal learning and practices that develop media and information competencies."

In recent decades, the MIL field has been enriched to include new kinds of mandatory literacies, essential to respond to new challenges. Central to the public sphere in this new era are the social media, where disinformation, hate speech, and populism take root. Key skills to face the new challenges are digital literacy, algorithmic literacy, artificial intelligence (AI) literacy, and transmedia literacy (Scolari, 2018). MIL has accordingly broadened its scope, as reflected in the following UNESCO (2018) definition that has gained consensus among academics and institutions:

> [MIL] includes a set of competencies that enable individuals to search, critically evaluate, use and contribute information and media content wisely; to develop a knowledge of one's rights online; understand how to combat online hate speech, fake information and news and cyberbullying; understand the ethical issues surrounding the access and use of information; and engage with media

and ICTs as producers of information and media content to promote equality, self-expression, pluralistic media and information, intercultural/interreligious dialogue, and peace. (UNESCO, 2018, p. 2)

While the enlarged coverage of MIL may now be clear, what remains uncertain is how to successfully implement MIL and which actors and strategies to use. While many deficits and challenges regarding MIL are acknowledged (Carrillo & Montagut, 2025; Lessenski, 2023; World Economic Forum, 2025), three in particular are recognised to be urgent: the training of key actors, including journalists, librarians, teachers, and families (Carrillo & Montagut, 2025; Castro-Pérez, 2025; LabCom UJI, 2025; McDougall & Rega, 2022; Pereira & Toscano, 2021); universalisation to encompass lifelong learning for all citizens, as set out in UNESCO's five laws of media literacy (2023); and financial backing that ensures MIL quality and continuity.

Other lines of action to further develop MIL include effective integration in the school curriculum (Sádaba & Salaverría, 2023), the development of innovative and attractive methodologies that promote meaningful learning (Lozano-Monterrubio et al., 2024; Tejedor, 2025), and the creation of inclusive and enduring projects, as recommended by the European Digital Media Observatory's Guidelines for Effective Media Literacy Initiatives (European Digital Media Observatory, 2024). MIL also needs to evolve continuously and to be interdisciplinary. As pointed out by the World Economic Forum (2025, p. 6): "As disinformation tactics evolve, so too must MIL initiatives, integrating insights from psychology, technology, and education to remain effective in an ever-changing digital environment."

3.1. MIL in Spain

While initiatives by professional associations, non-governmental organisations, and public and private institutions have been highlighted by several authors (Carrillo & Montagut, 2021a; Cucarella & Fuster, 2022; Ferrés et al., 2022), MIL implementation in Spain since the 1980s has been disjointed. In 2010, the first legislation referring to MIL (the General Law on Audiovisual Communication) was passed, centred on institutional and media responsibility for the training of citizens in how to consume and use information and media products. Between 2013 and 2022, various legislative actions have focused on the education sector, underlining the importance of digital skills and digitalisation planning in the education system, and encompassing technological equipment, open resources, and specific training for teachers and students (Carrillo & Montagut, 2025; Tomé, 2018).

Apart from legislative initiatives, a central role is played by public media and fact-checking organisations. In 2023, the Spanish national radio-television body (RTVE) launched the IVERES project to educate both the public and media professionals in ethical AI use in the handling and production of information. Several fact-checkers (Newtral, Maldito Bulo, Infoveritas, EFE Verifica, Verificat, etc.), in addition to playing a very active role in disseminating information on social media, provide training and design materials aimed at schools, colleges, universities, and other groups. Other entities offering various MIL-related resources and training activities include Learn to Check (specifically focused on disinformation), UNICEF, Fundación FAD Juventud, Cibervoluntarios, and initiatives by public and private media groups (e.g., RTVE Verifica, A3Media AMIBOX), professional journalism associations, and regional regulators (e.g., the Catalan audiovisual board [CAC]).

These entities target not only children and teenagers, but also vulnerable groups such as older adults. They also provide specific training to journalists, political advisors, teachers at all educational levels, and librarians. Since 2016, awareness of the need for MIL in personal and professional contexts has greatly intensified in Spain. Concern about disinformation has been expressed by 69% of Spanish respondents to surveys for the Digital News Report (Sierra et al., 2025), exceeding both the global average (58%) and the European average (54%). This concern is reflected in the emergence of the numerous initiatives mentioned above, aimed at deploying MIL as a means of digital and democratic resilience.

3.2. Librarians: Key to MIL Implementation in the Community

Along with educators, journalists, and families, librarians are key to implementing MIL (Carrillo & Montagut, 2021b; Cucarella & Fuster, 2022). Their role and the role of libraries have both evolved and changed enormously, as shown by new versions and updates of the Public Library Manifesto (International Federation of Library Associations and Institutions & UNESCO, 2022) from 1949 to date. Libraries, as 21st century cultural installations, are far more than merely a place to access books, newspapers, and magazines; they are also a safe place to access digital information and resources and to learn how to find reliable information and manage content on the internet. As defined by the International Federation of Library Associations and Institutions and UNESCO (2022), public libraries are a "living force for education, culture, inclusion and information...an essential agent for sustainable development."

Several of the 11 missions of the public library described in the Public Library Manifesto are related to MIL, specifically:

> Providing access to a broad range of information and ideas free from censorship, supporting formal and informal education at all levels as well as lifelong learning....[And also] initiating, supporting, and participating in literacy activities and programmes to build reading and writing skills, and facilitating the development of media and information literacy and digital literacy skills for all people at all ages, in the spirit of equipping an informed, democratic society. (International Federation of Library Associations and Institutions & UNESCO, 2022)

Other kinds of libraries also have a duty and responsibility to promote MIL, including scholarly libraries, university libraries, scientific libraries, and specialist libraries. Libraries are essential to MIL in several ways: They provide universal access to meaningful information (International Federation of Library Associations and Institutions & UNESCO, 2022), they facilitate lifelong learning, and they form part of the powerful collaborative ecosystem of librarians, educators, policymakers, associations, and local entities (Heredia-Sánchez, 2021; McKeever et al., 2017). Moreover, the library's information management expertise, innovative nature, and local and global perspectives render it a unique launching pad for MIL deployment.

While MIL can be embedded in routine library activities such as book clubs, conferences, digital literacy workshops, collaborative workspaces ("makerspaces"), and scholarly visits (American Library Association, 2020), a number of challenges first need to be overcome to develop critical thinking and MIL skills, primarily related to professional training (Hutchinson, 2024; Kautonen & Gasparini, 2024), adequate time and resources, and better funding.

4. Research Goals and Methods

We analysed the preparedness, knowledge, and attitudes of Spanish librarians regarding information disorders and MIL, given that, as stated by UNESCO (2018), libraries are essential spaces for the provision of reliable information to all citizens and are key to the dissemination and implementation of MIL (Hutchinson, 2024; Ireland, 2018; McKeever et al., 2017). We established four research goals, as follows:

RG1: To assess the extent to which librarians have received training in MIL and disinformation, and to test librarians' ability to detect false information and their familiarity with fact-checking tools.

RG2: To establish the extent to which activities aimed at fostering MIL are organised or hosted by libraries.

RG3: To investigate librarians' awareness of and attitudes to the scale of disinformation as a threat.

RG4: To analyse librarians' perspectives on future challenges and potential lines of action to combat disinformation.

4.1. Research Design

Our research was designed to analyse librarians' MIL before they acquired formal training on the subject by participating in a MIL project. This project was launched on 8 April 2025 with a course for 110 librarians whose main objective was equipping them with MIL skills; it is still ongoing, with a phase in which the librarians, with Learn to Check support, design and implement MIL activities for their communities.

4.1.1. Sample

According to the Spanish Library Cooperation Council (CCB), there are 4,603 active public libraries in Spain with 17,083,491 registered users (35.6% of the Spanish population). Cultural initiatives in these libraries are also significant: In 2023, 80% implemented 260,009 activities (which potentially included MIL actions; cf. Consejo de Cooperación Bibliotecaria, 2025). Of the public libraries, 53 are state-owned (cf. Ministerio de Cultura, 2024).

Our investigation, focused on the Media and Information Literacy Community Connections (MIL CC) project (2024–2025), aimed to survey 110 librarians employed in 50 Spanish libraries located in 14 of Spain's 17 autonomous regions (Andalusia, Aragon, Asturias, the Basque Country, Canary Islands, Castilla & León, Castilla la Mancha, Extremadura, Galicia, La Rioja, Madrid, Murcia, Navarra, and the Valencian Community). The MIL CC project is funded by the European Media and Information Fund and coordinated by the University Institute of Lisbon (Portugal). In Spain, with the goal of empowering libraries as key agents to fight disinformation, it is supported by the Ministry for Culture and the Spanish Society for Scientific Documentation and Information (SEDIC; for further details see "El proyecto internacional," 2025).

Of the questionnaires sent to 110 MIL project participants, those that were returned complete and that included the required consent constituted our final sample of 78 librarians, employed mainly in public

libraries, but also in university and school libraries and in a single specialist library. Regarding setting, 62 libraries were located in cities with >50,000 inhabitants, nine in towns with 10,000–50,000 inhabitants, and seven in towns with <10,000 inhabitants.

While the exploratory nature of our research has to be acknowledged as a limitation that restricts the generalizability of the findings, our study gathers a significant amount of data on a group and topic that, to our knowledge, have not previously been studied. Furthermore, as three criteria guiding pre-selection of the libraries participating in the project, the data are territorially representative (14 of Spain's 17 autonomous communities are included), representative of the predominant library types (mostly public), and representative of librarians interested in MIL.

4.1.2. Questionnaire

To obtain the data for our study, a semi-structured questionnaire was designed with the aim of collecting qualitative argumentative style data. Librarians were issued the questionnaire via a scanned QR code immediately before face-to-face training held in Madrid on 8 April 2025; absent librarians were sent the questionnaire in personalised emails, and their responses were collected by the end of May 2025. Although the self-reporting nature of the responses may have introduced certain biases, this format was chosen over alternatives because it allows data to be rapidly collected in a standardised manner, especially in the case of a geographically dispersed sample as in this study, with libraries from 14 of Spain's autonomous regions.

Questionnaire responses were anonymous, and the privacy and confidentiality of the participants were guaranteed. Participants were informed of the purposes of the research for which their data would be used and were required to give their explicit consent on the submission form. The questionnaire was not pre-tested, but was built on the basis of a questionnaire successfully used in a previous project, namely, Between Lines: Reading Disinformation, with participants from 25 libraries in the Barcelona area. The data were collected using Google Forms, processed with Excel, and visualised with Flourish. To foster participation, the questionnaire was designed to be completed in under 10 minutes.

The questionnaire ultimately aimed to determine the extent to which Spanish libraries could take on their expected key role in combating information disorders. It was therefore structured, based on the specific research goals, in 10 questions (Table 1), as follows:

> Q1: In what type of location is your library situated?

> Q2: Have you been provided with prior training on disinformation and MIL?

> Q3: Has your library organised or hosted workshops or talks on disinformation and MIL?

> Q4: What kinds of activities regarding disinformation and MIL have been held in your library?

> Q5: This image featuring Swedish activist Greta Thunberg circulated on social media some time ago. It is...

Q6: Explain whether this climate change graphic is accurate or inaccurate and why.

Q7: Which of the following tools can be used to verify suspect information?

Q8: If you receive information on social media and discover it is false, what do you do?

Q9: What do you think are the main harms of disinformation?

Q10: What are the challenges the library sector faces in promoting MIL?

Table 1. Research goals and the related survey questions.

Research goals	Survey questions
Librarian MIL and disinformation training (RG1)	Q2: Have you been provided with prior training on disinformation and MIL?
Librarian MIL-related skills (RG1)	Q5: This image circulated on social media some time ago. It features Swedish activist Greta Thunberg. This image is…
	Q6: Explain whether this graphic is accurate or incorrect and why.
	Q7: Which of the following tools can be used to verify suspect information?
Librarian MIL activity organisation (RG2)	Q3: Has your library organised or hosted workshops or talks on disinformation and MIL?
	Q4: What kinds of activities regarding disinformation and MIL have been held in your library?
Librarian awareness of and attitudes to disinformation (RG3)	Q8: If you receive information on social media and discover it is false, what do you do?
	Q9: What do you think are the main harms of disinformation?
Challenges to combating disinformation (RG4)	Q10: What are the challenges the library sector faces in promoting MIL and combating disinformation?
Library size	Q1: In what type of location is your library situated?

Q1 aimed to determine the size of the town/city where the library is located, as information to be combined with responses to the other questions to determine whether location was correlated in any way with other variables. Q2, Q3, and Q4 checked for previous knowledge and experience of activities aimed at fostering MIL (informing RG1 and RG2). Q5 and Q6 tested respondents with potential cases of disinformation (informing RG1). Q7 and Q8 addressed familiarity with fact-checking tools and behaviour on encountering potential disinformation (informing RG1 and RG3), given that the consequences could have an impact downstream. Q9 aimed to obtain information on ways to tackle the harmful effects of disinformation from the librarian as a potential information prescriber, and related, Q10 aimed to shed light on the challenges presented by information disorders from the perspective of the librarian, as a means to check their sensitivity to the issue (both informing RG4).

Some questions were yes/no questions (Q2, Q3), others were standard multiple-choice questions (Q1, Q5, Q7) or multiple-choice questions with an additional option of "other" to be completed by the respondent

(Q4, Q8, Q9, Q10). There was also an open question (Q6), for which reasoning in the response was coded as valid, invalid, or not stated (i.e., the respondent guessed correctly that the graphic was wrong, but were not able to explain why).

5. Findings

Our research provides evidence that sheds light on digital resilience, MIL skills, and MIL community activities in libraries in Spain.

5.1. Librarians' MIL Training and Skills

In relation to RG1, our data point to a lack of MIL training among librarians in Spain. Overall, 65.4% of librarians (51/78) stated that they had received no MIL training (prior to the MIL CC project). This deficiency was more critical in librarians working in smaller settings (Figure 1). Of librarians working in towns of <10,000 and of 10,000–50,000 inhabitants (small and medium-sized libraries, respectively), 71.4% and 77.77%, respectively, had received no MIL training, compared to 64.5% employed in cities of >50,000 inhabitants (large libraries). However, even this relatively low percentage for large libraries points to a great need for MIL training for librarians.
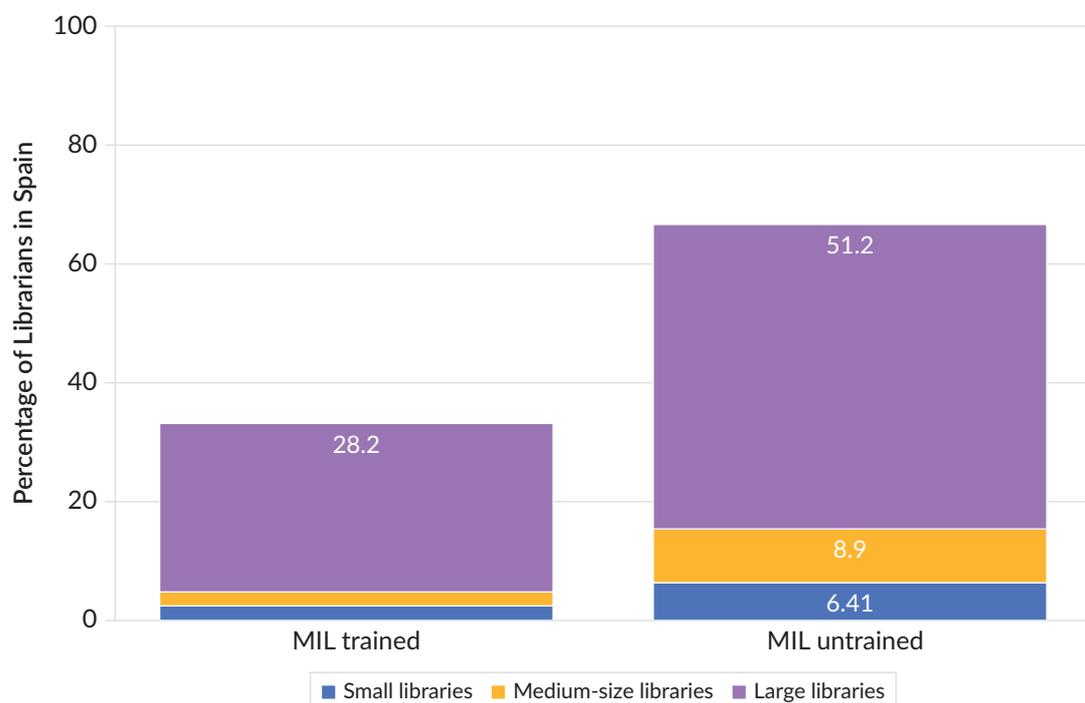

Figure 1. Librarians and MIL training by library size.

Despite their lack of training, the librarians demonstrated a good level of MIL knowledge and skills, as 70% (55/78) were able to identify a fake image, recognise a graphic with incorrect information, and select the correct fact-checking tools in a multiple-choice question.

However, regarding the Greta Thunberg image, although all librarians recognised that it was fake, not all were able to explain why: 78.2% (61/78) chose the correct answer (that it had been manipulated), with the remaining librarians incorrectly stating that it was decontextualised or an AI-generated deepfake (Figure 2). Again in relation to RG1, these data throw light on the ability of librarians to detect false information, particularly fake images.
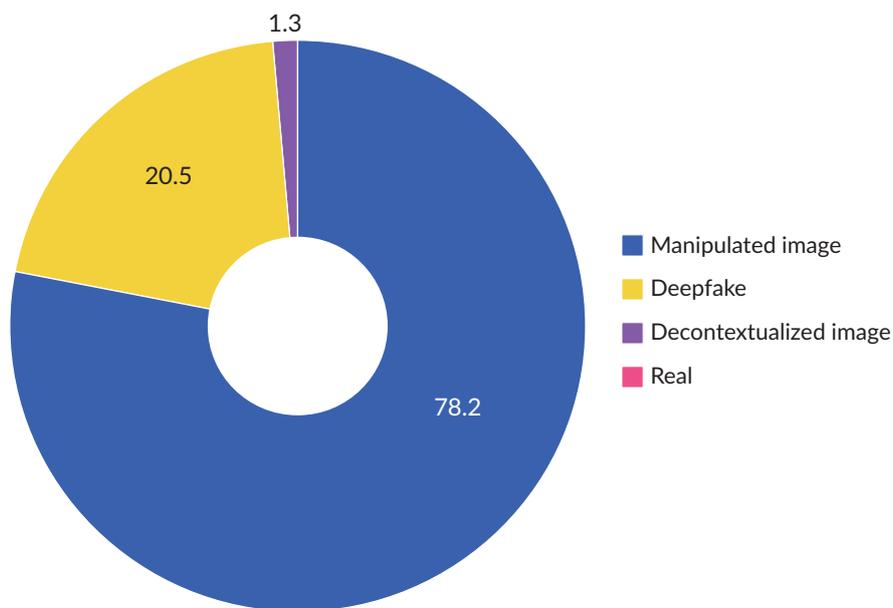

Figure 2. Responses to Q5 regarding classification of the Greta Thunberg image.

Noteworthy was the impact of previous training: 93% of previously MIL-trained librarians were able to correctly detect manipulation, compared to 70% of librarians who had not received previous MIL training. This finding underlines both the need for and the effectiveness of MIL training in relation to critical thinking and resilience to disinformation.

Regarding the climate change graphic decontextualised to foster denialism, 69.2% (55/78) correctly identified it as incorrect, 10.2% (8/78) incorrectly identified it as correct, and 20.51% (15/78) were unsure (Figure 3). When the 55 respondents who answered correctly were asked to explain why the graphic was misleading, 34/55 provided a valid reason, 8/55 an invalid reason, and 13/55 no reason. These data, also responding to RG1, provide insights not only on librarians' ability to identify incorrect graphics, but also on their reasoning capacity.

Again informing RG1, respondents were required to correctly answer a multiple-choice question about fact-checking tools. The correct response was chosen by 73.10% (57/78) of respondents. Prior MIL training was found not to be a determining factor regarding choice of a fact-checking tool, as 70% of those who had received prior training chose the correct answer compared to 75% of those who had not received prior training.
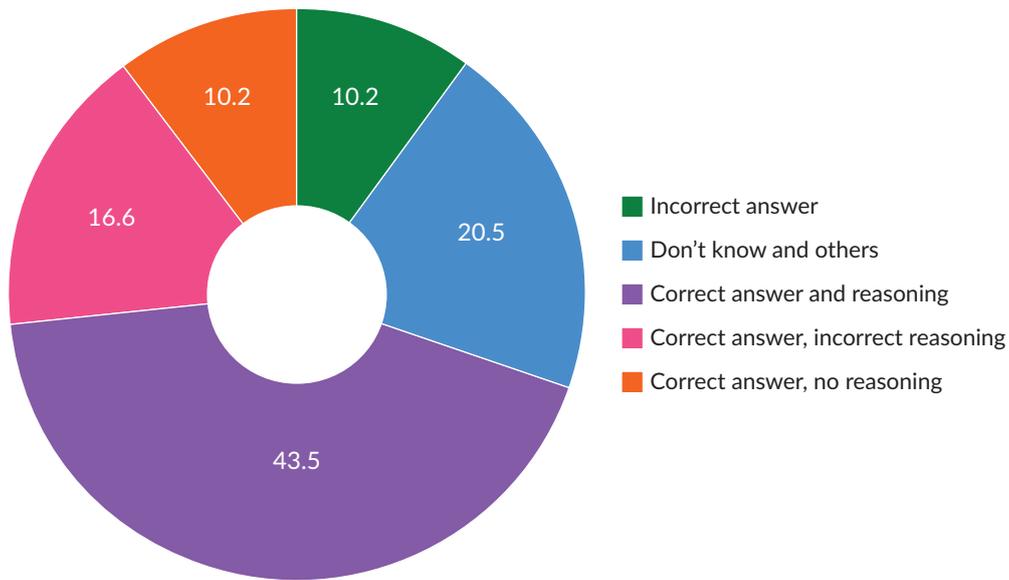
Figure 3. Responses to Q6 regarding the inaccurate climate change graphic.

5.2. Library MIL Activities

Responding to RG2, the data show that only 39.7% (31/78) of librarians reported organising MIL-related activities for their communities. A correlation existed between MIL-trained librarians and library MIL activities (Figure 4): 51.85% of librarians who had received some kind of MIL training stated having organised MIL activities for their communities, compared to just 33% of untrained librarians.
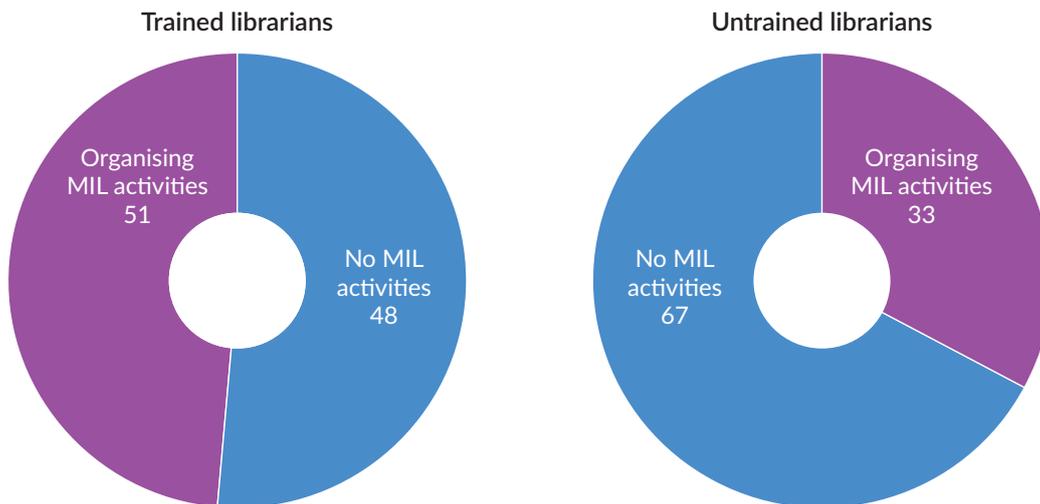

Figure 4. Librarians organising MIL activities according to their MIL training.

Library size was also significant in terms of the organisation of MIL activities: 41.9% of libraries in cities of >50,000 inhabitants developed MIL activities, compared to just 28.5% of libraries in towns of <10,000 inhabitants. Finally, regarding the 31 libraries that organised a MIL-related activity, the most common activities were workshops (74%) followed by talks (58%), with exhibitions, documentaries, and book presentations accounting for smaller shares.

5.3. Awareness of and Attitudes to Disinformation

In response to RG3, we found Spanish librarians to broadly be aware of the threat posed by disinformation and to be capable of understanding its deleterious effects: interference in and erosion of democratic values, damage to vulnerable targets, the generation of mistrust, and the undermining of peaceful coexistence (Figure 5).
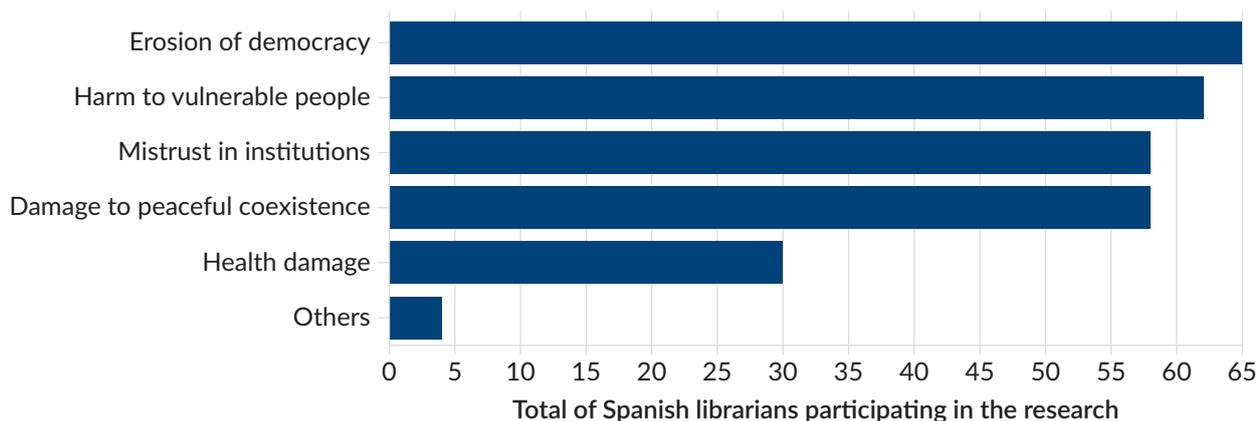

Figure 5. Librarians' perceptions of the main disinformation harms.

The polled librarians were active, critical, and empowered when managing and reporting disinformation. Only 3.8% (3/78) stated that they would do nothing; in contrast, 66.7% (52/78) stated that they would report disinformation, 59% (46/78) declared that they would unfollow the corresponding account, and 46.2% (36/78) responded that they would warn others.

5.4. Challenges to Combating Disinformation

In response to RG4, we found that the librarians were aware that more could be done to promote MIL among citizens. From their perspective, the main shortcomings to effectively fostering citizen MIL were various lacks (Figure 6), mainly of training for librarians, but also of prioritisation by public institutions, of social awareness, and of financial resources (70/78, 54/78, 40/78, 37/78, and 2/78, respectively).
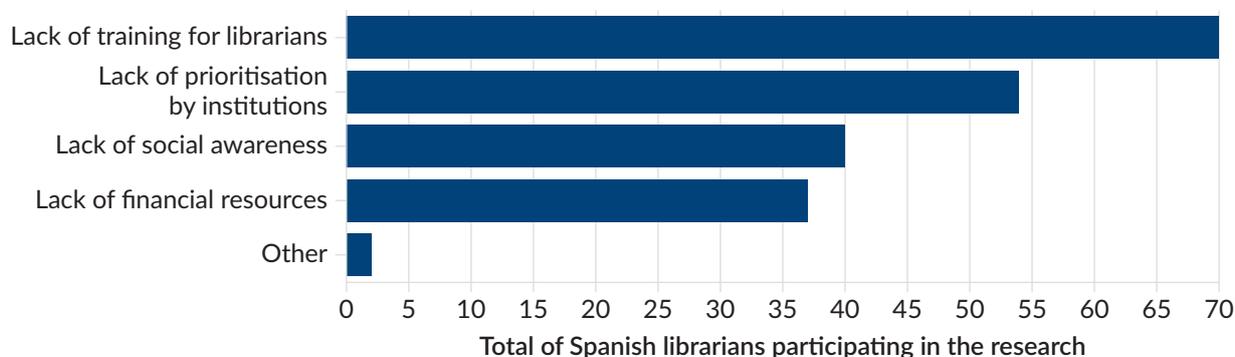

Figure 6. Challenges to effective MIL promotion by libraries.

These shortcomings point to the challenges faced by libraries and possible future lines of action to effectively promote MIL and foster digital resilience to disinformation among citizens.

5.5. Libraries in Cities: Better Situated

Our study also explored a possible link between library setting and MIL training and MIL activities, finding that the size of the town/city where a library was located affected both the level of librarian MIL and disinformation training and the organisation of related activities. While this kind of training for librarians was lacking overall, the deficit was more pronounced in smaller libraries: 35.4% of librarians employed in cities of >50,000 inhabitants had received MIL training, compared to only 22.2% and 28.5% in towns of 10,000–50,000 and <10,000 inhabitants, respectively.

A similar pattern was evident concerning the organisation of MIL activities for citizens: Librarians in larger cities were better placed in this regard. Although such initiatives were clearly lacking overall, the lack was especially pronounced in smaller towns: No MIL activities were organised for their communities in 71.4% of towns of <10,000 inhabitants, compared to 55% of towns of 10,000–50,000 inhabitants, and 59.6% of cities of >50,000 inhabitants.

6. Discussion and Conclusions

The results of this research coincide with those of previous studies and, at the same time, provide an accurate and up-to-date picture of Spanish librarians' knowledge and promotion of MIL in their communities. Consistent with the findings of Pereira and Toscano (2021), this research highlights the need to strengthen the role of librarians as key agents in building digital and democratic resilience among citizens.

Our results, corroborating previous research (Hutchinson, 2024; Ireland, 2018; McKeever et al., 2017), show that Spanish librarians, despite being key in the fight against disinformation and in the implementation of MIL, are insufficiently trained in this area. Only 40% of the librarians in our study had received specific training in MIL, coinciding with previous studies that point to MIL training deficits, not only for librarians (Hutchinson, 2024; Kautonen & Gasparini, 2024), but also for other professionals and age groups and the Spanish population in general (Herrero-Curriel & La Rosa, 2022; Sierra et al., 2025). This need for training, corroborated by assertions elsewhere (Carrillo & Montagut, 2025; Castro-Pérez, 2025; LabCom UJI, 2025), is especially urgent in Spain, where concern about disinformation affects almost 70% of the population, a figure well above the European average (Sierra et al., 2025).

Librarian training is crucial because it enables MIL activities to be developed independently of external professionals or organisations; external involvement would require additional financial resources, already an identified difficulty for libraries. Training would also foster continuity and lifelong training, as recommended by UNESCO (2023).

Our study demonstrates that MIL-trained librarians tend to organise more MIL projects, activities, and initiatives for their communities. The fact that they are also better able to recognise manipulated images and graphics and to deploy fact-checking tools confirms their potential effectiveness in promoting critical thinking and in creating digital and democratic resilience, as evidenced by previous research (Herrero-Curriel

& La Rosa, 2022; LabCom UJI, 2025; Sádaba & Salaverría, 2023; UNESCO, 2018). The fact that workshops and talks were the most common activities promoted by librarians in our study corroborates the need for innovative methodologies, as pointed out by various authors (Lozano-Monterrubio et al., 2024; Tejedor, 2025; World Economic Forum, 2025). The scope and quality of MIL would be improved by a shift from activities that focus on passive involvement (such as talks or exhibitions) to activities that actively empower citizens (Carrillo & Montagut, 2025; European Digital Media Observatory, 2024).

As would be expected, we found that the librarians with the greatest capacity to promote MIL were those based in large libraries, but also, interestingly, in small libraries more so than medium-sized libraries; this is probably explained by the fact that grants and subsidies disproportionately benefit smaller municipalities relative to medium-sized municipalities.

The librarians were not only aware of the threat posed by disinformation; their concern also exceeded that of the general population (Sierra et al., 2025). Corroborating the findings of several other studies (Carrillo & Iranzo, 2024; Colomina et al., 2021; European External Action Service, 2023), our respondents pointed to erosion of democratic values, mistrust of institutions, and individual harms as the main repercussions of disinformation. Their commitment to curbing disinformation was evident from their behaviour on identifying disinformation on social media and their initiative in organising MIL activities in the interest of an informed, critical, and competent citizenry (International Federation of Library Associations and Institutions & UNESCO, 2022). However, only 40% of our respondents admitted to having been proactive against disinformation; this would suggest, as evidenced by previous studies (Carrillo & Iranzo, 2024; Lessenski, 2023), that library efforts are insufficient.

Our research suggests that training librarians and allocating funds to libraries for community MIL activities should be prioritised, along with policies to foster collaboration between schools, libraries, media organisations, and other civic institutions, thereby reinforcing the information ecosystem and developing resilience to polycrisis and disinformation. Our study also shows that, despite not being trained, most librarians had the necessary skills and knowledge to detect disinformation, and were highly aware of the corresponding harms. Paradoxically, however, they did not organise MIL activities, probably because they lacked confidence (due to not having received proper training), and also perhaps, because they fail to recognise their relevance and potential impact as key MIL agents.

The failure to recognise the importance of libraries as key MIL players is closely linked to a fragmentation in public policy objectives in Spain. In other national and European laws and plans, MIL is included as a core subject in education systems (Carrillo & Montagut, 2021a; Cucarella & Fuster, 2022); in Spain, however, while libraries are vaguely cited as an actor, how they should intervene in implementing MIL is not explicitly described. Some recent reports (e.g., Borrego & Comalat, 2023) point to a lack of technological resources and activities for young people as factors that limit the influence of Spanish libraries. The central role of a library in community MIL is, it would seem, overdependent on the initiative and willingness of the librarian.

A MIL policy that offers incentives, recognitions, and awards for librarians and that develops MIL-focused guidelines and best practices would overcome some of the problems arising from (a) a lack of definition of the librarian's role as a key MIL agent, (b) a lack of resources and strategies, and (c) librarians' uncertainties and insecurities regarding the organisation of MIL activities. A future research line, assuming policies implemented

along the above lines, would be to evaluate how public programmes, funding, and institutional prioritisation influence libraries' capacities to promote MIL.

The present study contributes to the discussion on how libraries can become community spaces for critical learning, democratic engagement, and strengthened media competence, and on how librarians can actively promote digital literacy and foster resilience against disinformation. A line of enquiry for future research would be a study of the inferential or correlational links between different variables that have merely been hinted at in this study.

In terms of the continuity of this research, it would also be interesting to study MIL skills and promotion according to library type (i.e., public, university, school, specialist, other), and to measure the effectiveness of community-implemented MIL activities by evaluating the knowledge and skills acquired. Finally, research into other key digital resilience agents, such as teachers and journalists, would identify other challenges to promoting MIL and solutions in the form of lines of action, thereby fostering society-wide critical thinking and digital and democratic resilience against widespread disinformation and the rise of hate speech.

The essential public service provided by public libraries should be the starting point for strategies against disinformation. Libraries are staffed by highly qualified professionals trained in locating and managing reliable physical, digital, textual, and audiovisual sources and in catering to a general and diverse public. In their provision of a public service, librarians are directly connected with the values of democratic societies and are aware of the requirements of a healthy public sphere. Failure to harness this human potential in the fight against disinformation, by considering libraries to be mere lending services, is a strategic error. In increasingly toxic digital environments, libraries, and especially librarians, become a central and reliable point of reference in a space of democratic resilience that is available to all.

Conflict of Interests
Two of the authors are president and vice-president of the NGO promoting the MIL CC project within which the data were obtained, although this research was not included in or funded by the project.

Data Availability
The research data associated with the article are available and can be accessed on demand by requiring the authors' permission to access the Google Forms data.

References

American Library Association. (2020). *Media literacy in the library: A guide for library practitioners*. https://apo.org.au/sites/default/files/resource-files/2020-11/apo-nid311538.pdf

Aufderheide, P. (1993). *Media literacy: A report of the National Leadership Conference on Media Literacy*. Aspen Institute.

Bennett, W. L., & Kneuer, M. (2024). Communication and democratic erosion: The rise of illiberal public spheres. *European Journal of Communication*, *39*(2), 177–196.

Blanco-Herrero, D., Amores, J. J., & Sánchez-Holgado, P. (2021). Citizen perceptions of fake news in Spain: Socioeconomic, demographic, and ideological differences. *Publications*, *9*(3), Article 35. https://doi.org/10.3390/publications9030035

Borrego, À., & Comalat, M. (2023). *L'estat de les biblioteques públiques a Catalunya l'any 2023*. Universitat de Barcelona. https://hdl.handle.net/2445/222291

Buckingham, D. (2005). *Educación en medios: Alfabetización, aprendizaje y cultura contemporánea*. Paidós.

Cano-Orón, L., Calvo, D., López García, G., & Baviera, T. (2021). Disinformation in Facebook Ads in the 2019 Spanish general election campaigns. *Media and Communication*, *9*(1), 217–228. https://doi.org/10.17645/mac.v9i1.3335

Carrillo, N., & Iranzo, M. (2024). Desinformación de género: Principales narrativas y actuaciones para la resiliencia. In N. Morales (Ed.), *Análisis interseccional de la desinformación de género. Els drets socials en temps de desinformació para un abordaje desde las instituciones educativas* (pp. 107–125). Colex.

Carrillo, N., & Montagut, M. (2021a). Desinformació, iniciatives de verificació i alfabetització mediàtica a Catalunya. In M. Civil & B. López (Eds.), *Informe de la comunicació a Catalunya 2019–2020* (pp. 225–242). Institut de la Comunicació, Universitat Autònoma de Barcelona.

Carrillo, N., & Montagut, M. (2021b). Tackling online disinformation through media literacy in Spain: The project "Que no te la cuelen." *Catalan Journal of Communication & Cultural Studies, 13*(1), 149–157.

Carrillo, N., & Montagut, M. (2025). Media and information literacy (MIL): A resilient response to the risk of misinformation. In R. Gelado, J. Sixto, & J. E. González (Eds.), *Disinformation and risk society. What is at stake with the proliferation of information disorders* (pp. 229–252). Fragua.

Castro-Pérez, R. (2025). The professional identity of teachers in the era of artificial intelligence: Challenges and redefinitions in the Latin American context. *Desde el Sur, 17*(2), Article e0018. https://doi.org/10.21142/DES-1702-2025-0018

Christ, W. G., & Potter, W. J. (1998). Media literacy, media education, and the academy. *Journal of Communication, 48*, 5–15.

Colomina, C., Sánchez Margalef, H., & Youngs, R. (2021). *The impact of disinformation on democratic processes and human rights in the world*. European Parliament. https://www.europarl.europa.eu/RegData/etudes/STUD/2021/653635/EXPO_STU(2021)653635_EN.pdf

Consejo de Cooperación Bibliotecaria. (2025). *Bibliotecas públicas españolas en cifras*. https://www.ccbiblio.es/bibliotecas-publicas-espanolas-en-cifras-2023

Cucarella, L., & Fuster, P. (2022). *Alfabefización mediática: Contexto actual, legislación, casos de éxito, herramientas y recursos, y percepción y propuestas de especialistas y profesores*. Laboratorio de Periodismo, Fundación Luca de Tena. https://www.apmadrid.es/wp-content/uploads/2023/03/informe-alfabetizacion-mediatica.pdf

El proyecto internacional MIL CC duplica plazas y formará a más de 100 bibliotecarios. (2025, March 5). *Learn to Check*. https://learntocheck.org/item/el-proyecto-internacional-mil-cc-duplica-plazas-y-formara-a-mas-de-100-bibliotecarios

Esteve-Del-Valle, M. (2022). Homophily and polarization in Twitter political networks: A cross-country analysis. *Media and Communication*, *10*(2), 81–92. https://doi.org/10.17645/mac.v10i2.4948

European Commission. (2018). *A multi-dimensional approach to disinformation. Report of the Independent High Level Group on Fake News and Online Disinformation.* Publications Office of the European Union. https://data.europa.eu/doi/10.2759/739290

European Digital Media Observatory. (2024). *EDMO guidelines for effective media literacy initiatives.* https://edmo.eu/wp-content/uploads/2024/10/EDMO-Guidelines-for-Effective-Media-Literacy-Initiatives.pdf

European External Action Service. (2023). *FIMI targeting LGBTIQ+ people: Well-informed analysis to protect human rights and diversity*. https://www.eeas.europa.eu/eeas/fimi-targeting-lgbtiq-people_en

Ferrés, J., Figueras, M., & Ambròs, A. (2022). EduMediaTest, una eina al servei de la competència mediàtica: Informe sobre el projecte, resultats i recomanacions. *Quaderns del CAC*, *48*, 79–84.

Gelado-Marcos, R., & Moreno-Felices, P. (2022). Disinformation as a widespread problem and vulnerability factors toward it: Evidence from a quasi-experimental survey in Spain. *International Journal of Communication*, *16*, 3599–3625.

Guerrero-Solé, F. (2025). Lo que la polarización esconde. In F. Guerrero-Solé & L. Pérez-Altabe (Eds.), *La democracia en riesgo ¿Internet e IA al servicio de los populismos?* (pp. 73–80). Editorial UOC.

Haavisto, C., Chajed, A., & Kyllönen, R. (2022). Children's news media as a space for learning about difference. *Media and Communication*, *10*(4), 256–266. https://doi.org/10.17645/mac.v10i4.5729

Heredia-Sánchez, F. (2021). Innovación y alfabetización mediática e informacional (AMI) en bibliotecas. Recursos, propuestas y tendencias. *Boletín de la Asociación Andaluza de Bibliotecarios*, *121*, 49–81.

Herrero-Curriel, E., & La Rosa, L. (2022). Secondary education students and media literacy in the age of disinformation. *Comunicar*, *30*(73), 95–106. https://doi.org/10.3916/C73-2022-08

Hutchinson, E. (2024). Navigating tomorrow's classroom: The future of information literacy and inquiry-based learning in the age of AI. *Journal of Information Literacy*, *18*(1), 118–122. https://doi.org/10.11645/18.1.553

International Federation of Library Associations and Institutions, & UNESCO. (2022). *IFLA-UNESCO Public Library Manifesto 2022.* https://repository.ifla.org/rest/api/core/bitstreams/d414c76e-17ef-4581-9c0f-cc6e250a2743/content

Ireland, S. (2018). Fake news alerts: Teaching news literacy skills in a meme world. *The Reference Librarian*, *59*(3), 122–128.

Kautonen, H., & Gasparini, A. A. (2024). B-Wheel—Building AI competences in academic libraries. *The Journal of Academic Librarianship*, *50*(4), Article 102886. https://doi.org/10.1016/j.acalib.2024.102886

LabCom UJI. (2025, May 20). *Sesión 5. Webinar impulso AM. Carmen Marta Lazo* [Video]. YouTube. https://youtu.be/Fsx06qVj5_M?list=PL6uy7Cpfzds9l13nLlqcbc6EAalkFea9t

Lessenski, M. (2023). *The Media Literacy Index 2023. Measuring the vulnerability of societies to disinformation*. Open Society Institute. https://osis.bg/wp-content/uploads/2023/06/MLI-report-in-English-22.06.pdf

Livingstone, S. (2004). Media Literacy and the challenge of new information and communication technologies. *The Communication Review, 7*(1), 3–14. https://doi.org/10.1080/10714420490280152

López-González, H., Sosa, L., Sánchez, L., & Faure-Carvallo, A. (2023). Educación mediática e informacional y pensamiento crítico: Una revisión sistemática. *Revista Latina de Comunicación Social*, *81*, 399–423. https://www.doi.org/10.4185/RLCS-2023-1939

Lozano-Monterrubio, N., Cuartielles, R., Carrillo, N., & Montagut, M. (2024). Escape rooms como metodología educativa para combatir la desinformación en alumnos de primaria y secundaria: El caso de Learn to Escape. *Revista Latina de Comunicación Social*, *82*. https://doi.org/10.4185/rlcs-2024-2243

Macarrón Máñez, M. T., Moreno Cano, A., & Díez, F. (2023). Impact of fake news on social networks during Covid-19 pandemic in Spain. *Young Consumers*, *25*(4), 439–461. https://doi.org/10.1108/YC-04-2022-1514

Marta Lazo, C. (2018). El marco teórico de la alfabetización mediática: Orígenes, fundamentos y evolución conceptual. In C. Fuente Cobo, M. C. García Galera, & C. R. Camili Trujillo (Eds.), *La educación mediática en España: Artículos seleccionados* (pp. 47–54). Editorial Universitas.

Martín Barbero, J. (2002). *La educación desde la comunicación*. Norma.

Masterman, L. (1996). La revolución de la educación audiovisual. In R. Aparici (Ed.), *La revolución de los medios audiovisuales. Educación y nuevas tecnologías* (pp. 29–38). La Torre.

McDougall, J., & Rega, I. (2022). Beyond solutionism: Differently motivating media literacy. *Media and Communication*, *10*(4), 267–276. https://doi.org/10.17645/mac.v10i4.5715

McKeever, C., Bates, J., & Reilly, J. (2017). School library staff perspectives on teacher information literacy and collaboration. *Journal of Information Literacy*, *11*(2), 51–68. https://doi.org/10.11645/11.2.2187

Ministerio de Cultura. (2024). *Panorámica de las 53 bibliotecas públicas del Estado*. https://mapabpe.mcu.es/mapabpe.cmd

Monreal Guerrero, I. M., Parejo Llanos, J. L., & Cortón de las Heras, M. d. l. O. (2017). Alfabetización mediática y cultura de la participación: Retos de la ciudadanía digital en la sociedad de la información. *EDMETIC*, *6*(2), 148–167. https://doi.org/10.21071/edmetic.v6i2.6943

Morin, E., & Kern, A. B. (1999). *Homeland Earth: A Manifesto for the New Millennium*. Hampton Press.

Paniagua Rojano, F., Seoane Pérez, F., & Magallón-Rosa, R. (2020). Anatomía del bulo electoral: La desinformación política durante la campaña del 28-A en España. *Revista CIDOB d'Afers Internacionals*, *124*, 123–145. https://doi.org/10.24241/rcai.2020.124.1.123

Pereira, S., & Toscano, M. (2021). Media and information literacy in school libraries in Portugal: Mapping practices to improve policies. *Revue française des sciences de l'information et de la communication*, *22*. https://doi.org/10.4000/rfsic.10993

Sádaba, C., & Salaverría, R. (2023). Combatir la desinformación con alfabetización mediática: Análisis de las tendencias en la Unión Europea. *Revista Latina de Comunicación Social*, *81*, 1–17. https://doi.org/10.4185/RLCS-2023-1552

Salaverría, R., Buslón, N., López-Pan, F., León, B., López-Goñi, I., & Erviti, M.-C. (2020). Desinformación en tiempos de pandemia: Tipología de los bulos sobre la Covid-19. *Profesional de la información*, *29*(3), Article e290315. https://doi.org/10.3145/epi.2020.may.15

Scolari, C. (2018). *Alfabetismo transmedia en la nueva ecología de los medios. Libro blanco*. Transmedia Literacy, Universitat Pompeu Fabra. https://transmedialiteracy.upf.edu/sites/default/files/files/TL_whit_es.pdf

Shandilya, S. K., Datta, A., Kartik, Y., & Nagar, A. (2024). *Digital resilience: Navigating disruption and safeguarding data privacy*. Springer. https://doi.org/10.1007/978-3-031-53290-0_1

Sierra, A., Labiano, R., Novoa-Jaso, M. F., & Vara-Miguel, A. (2025). *Digital News Report España 2025. Periodismo y democracia: Confianza, comunidad y narrativas innovadoras*. Servicio de Publicaciones de la Universidad de Navarra. http://doi.org/10.15581/019.2025

Tejedor, S. (2025). Aprender haciendo y pensando: Proyectos e ideas para fomentar el pensamiento crítico. In G. Torres Espinoza & O. G. García Santiago (Eds.), *Impactos de la desinformación en un mundo cambiante* (pp. 36–59). Editorial Innovación Educativa.

Tomé, V. (2018). Assessing media literacy in teacher education. In M. Khosrow-Pour (Ed.), *Teacher training and professional development: Concepts, methodologies, tools, and applications* (pp. 67–85). IGI Global.

UNESCO. (2018). *Executive Board 205 EX/34 Rev*. https://unesdoc.unesco.org/ark:/48223/pf0000265509

UNESCO. (2023). *Five laws of media and information literacy*. https://www.unesco.org/en/media-information-literacy/five-laws

Victoria-Mas, M. (2021). *Beyond crisis: News consumption and misperception about the Covid-19 crisis—What can we learn to strengthen resilience in the EU?* In *Charlemagne Prize Academy annual report on the future of the Union* (pp. 40–45). Charlemagne Prize Academy. https://www.karlspreis.de/files/docs/Publications/Charlemagne%20Prize%20Academy_Annual%20Report%202020.pdf

World Economic Forum. (2025). *Rethinking media literacy: A new ecosystem model for information integrity*. https://reports.weforum.org/docs/WEF_Rethinking_Media_Literacy_2025.pdf

About the Authors

Nereida Carrillo is a lecturer in the department of Media, Communication and Culture at Universitat Autònoma de Barcelona. Her research focuses on disinformation and media and information literacy (MIL). She is the president of Learn to Check, an NGO promoting MIL against disinformation in Spain, with more than 22,000 people trained.

Marta Montagut is an associate professor of journalism in the Department of Communication Studies at Universitat Rovira i Virgil and a member of the research group Asterisc. She is vice-president of Learn to Check, an NGO promoting MIL against disinformation in Spain. Her current research focuses on disinformation as a weapon of media and political manipulation.

Roberto Gelado Marcos is a senior lecturer at CEU San Pablo University. In 2019 he was the principal investigator of a project funded by the Fundación Luca de Tena and Facebook that studied the impact of disinformation in Spain. Since September 2021 he has been the principal investigator of the CEU San Pablo University node of the IBERIFIER project, funded by the European Commission.