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The background of the cover is a photograph of a young woman with dark skin and curly hair, looking directly at the camera with a slight smile. She is wearing a patterned top and holding a silver tablet. The background is a blurred classroom setting with other students.

**Final report of
the Commission
expert group
on tackling
disinformation
and promoting
digital literacy
through
education and
training**

EUROPEAN COMMISSION

Directorate-General for Education, Youth, Sport and Culture

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E-mail: EAC-DIGITALLITERACYEXPERTGROUP@ec.europa.eu

*European Commission
B-1049 Brussels*

Final report of the Commission expert group on tackling disinformation and promoting digital literacy through education and training

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Ahmet Murat Kılıç, Council of Europe

Alina Bargaoanu

Arminas Varanauskas

Cassie Hague, the Organisation for Economic Co-operation and Development (OECD)

Charo Sádaba, Iberian Digital Research, University of Navarra

Claus Hjorth

Divina Frau-Meigs, Savor Devenir

Eleni Kyza

Gabriella Thinsz, The Swedish Educational Broadcasting Company

Giacomo Mazzone

Irene Andriopoulou

Jens Vermeersch, European Federation of Education Employers

Johanna Boersch-Supan, Vodafone Germany Foundation

Juliane von Reppert-Bismarck, Lie Detectors

Kamil Mikulski, Kosciuszko Institute

Kari Kivinen, European Union Intellectual Property Office (EUIPO)

Norman Röhner, ALL DIGITAL

Onno Hansen-Staszyński

Sally Reynolds, Media and Learning Association

Sandra Troia

Thomas Nygren

Veni Markovski

Vitor Tomé

EXECUTIVE SUMMARY

Introduction and framing

Communication across geographical, linguistic and cultural borders has never been so immediate and easy. Access to digital technologies promotes both unparalleled social and educational opportunities as well, for instance, through the connections between digital learning, empowerment and an ‘inclusive’ future. The effective and responsible use of digital learning technologies and resources is a key tool for lifelong learning and helping young people become active and responsible members of society. Consequently, it is important to educate young people about digital technologies, not only relating to how technology systems work but also on the many impacts of digital technologies. Special attention should also be paid to the impact of digital technologies on individual and collective well-being.

In parallel to many opportunities, the rapid and pervasive emergence of digital technologies, potentially exposes (young) people to a plethora of online threats on a regular basis. These include disinformation, misinformation and political propaganda, conspiracy theories cyberbullying, recruitment efforts by extremist organisations, cyber predators, phishing, scams, and malware. There is evidence that people of all ages are increasingly at risk and are being exposed to various forms of disinformation (e.g., what is colloquially referred to as ‘fake news’). Information overload and the lack of effective ways to filter information poses another challenge. This challenge makes it necessary for individuals to be able to critically approach, assess and verify information and become more resilient to threats. At the societal level, the online manipulation of information, increasingly sophisticated and easily disseminated, has affected people’s trust in mainstream media and reliable sources of information.

Educational institutions are in a unique position to help educate young people about the threats identified above. Due to the constant exposure of young people to the digital universe, those involved in education and training have an important task to stay abreast of an ever-changing environment and equip young people with the critical thinking skills required to exercise judgment, analyse complex realities, and recognise the difference between opinion and fact. Education thus has a crucial role to play in helping young people strengthen the competences needed to successfully navigate the digital world they encounter on a daily basis.

The current report is informed by the [Digital Education Action Plan \(2021-2027\)](#) of the European Commission, and the associated mandate under Action 7 to develop guidelines for teachers and educators to tackle disinformation and promote digital literacy through education and training. The key role education and training plays in equipping young people with the competences needed to live and thrive in the digital age, as well guard against the threats posed by disinformation is highlighted throughout.

The report brings together the main insights produced by a dedicated Commission Expert Group regarding both challenges and potential solutions for this emerging and complex field, as well as their tentative conclusions and recommendations. Although many parts of the document can be useful as a stand-alone overview of the field, it is primarily intended as a key resource and background paper for the development of

guidelines for teachers and educators, the second and final outcome of the Expert Group. The target audience of the report is policymakers at the EU, national and regional levels, civil society, academia, the education and training community and interested citizens.

Main challenges when promoting digital literacy and tackling disinformation

The report identifies, among others, the following challenges:

- More insight is needed on how to actively engage the wide network of public and private stakeholders involved in **creating, supporting, and consuming information online**, especially in a way that engagement can bring about effective and lasting impact.
- The field of digital literacy and disinformation is dynamic and ever changing. Teachers and young people need both the **motivation and competences to actively engage** with these changes.
- Many initiatives relating to digital literacy and disinformation are purely technical in nature (how technology works) and do not focus enough on the **development of critical thinking skills**.
- Much digital literacy work in schools is teacher centred and does not sufficiently involve students in their own learning.
- **Teachers often lack the competences** needed to effectively create learning spaces in classrooms and schools where **students can engage** with the topics of digital literacy and disinformation. Teachers also often lack the time to **acquire the necessary level of knowledge and expertise** associated with teaching about the digital world.
- **Students are often shy and hesitant to discuss their online lives** with teachers, though they find the digital world fascinating and relevant to their lives.
- There is a misconception that all young people know how to use digital technologies confidently. While many have well developed digital competences, some still have **low digital skills and struggle to carry out even basic digital tasks**.
- There is **insufficient awareness among teachers and parents** regarding the risks associated with the threats that characterise the use of digital media.
- The development of digital literacy competences is not sufficiently addressed as a subject in **pre-service teacher education**.
- There is a **lack of guidance for teachers** regarding how to address the topics of digital literacy and disinformation, and also a lack of solid resources.
- The **design of effective programs is challenging** because the world of digital literacy is complex, and educational materials need to be presented in accessible ways for all users.
- There is a **lack of evidence-based interventions**, which makes it difficult for policy makers to measure what effective and less effective approaches are.
- Some interventions to tackle disinformation threaten free speech and free access principles, as well the technical functioning of the internet. Other interventions can lead to the fragmentation of the internet.

- There are **various challenges relating to the sophistication and automation** of the technology associated with disinformation, such as algorithms.

Conclusions and Recommendations for teachers and educators

Based on the identified challenges, the report, proposes based on the Expert Group input the following recommendations.

- **Student-centred educational approaches have shown to be highly effective** in promoting digital literacy and making students more resilient to disinformation online. Students (especially at the secondary level and higher) are often more comfortable with digital media and use it frequently. The **teacher’s role is increasingly to offer the necessary context, critical reflection and support**. Respectful interaction between teachers and students, as well as honest conversations can help build trust and strengthen the teacher-student relationship. **Teachers need support in strengthening their abilities** to take on such new roles and responsibilities.
- At the school level digital literacy and media literacy initiatives are most effective both as an integrated cross-subject and a separate subject approach, meaning there is room for both in a school. A **combination of both formal and non-formal educational** initiatives is also highly effective.
- **Teachers need guidance in terms of the various criteria** that relate to digital literacy, such as what criteria to use when selecting appropriate resources and approaches. They also need support in terms of **developing lesson plans** in an often-overcrowded schedule.
- Given the vast experience many students have with digital platforms and social media, they can **provide teachers with many insights that can be the basis for further learning**.
- Teachers need **effective instruments to assess their own progress** and their ability to navigate the challenges posed by teaching in digital environments. They might need assistance from colleagues when they encounter challenges. Where possible it is beneficial to **join teacher networks where** such challenges and potential solutions are discussed.
- Teachers and educators, as pedagogical experts, can **tap into the vast potential of the digital world to promote student knowledge and understanding**. More than ever before, students can find the most up to date information, interact online with experts and other students, connect with students around the world and collaborate with them, stay up to date about societal developments, conduct research, etc.
- Teachers have a **right to teach in a safe environment**. Mechanisms should be put in place at the school level to support them in addressing challenges they might encounter relating to feeling safe. Such initiatives can benefit from including school psychologists and social workers.
- There is no ‘one size fits all’ when it comes to educational approaches to promoting digital literacy and addressing disinformation. Teachers can **best judge what works best in their own learning environment**, with respect to existing student competences, the subject being taught, support from school management, relations with the outside community, etc.

- There are **differences between misinformation and disinformation**, as well as the distinct challenges and solutions associated with both. This has implications for teaching.
- Teachers **need assistance in identifying and implementing effective resources** and strategies that engage students in critical analysis.
- Disinformation is often targeted at those with non-majority backgrounds. Therefore, an **equity lens is needed when addressing disinformation and its consequences**.
- **Motivating students to become more digitally literate can be challenging**. Sharing strategies and learning new strategies can be an effective tool to promote digital literacy.
- It is important to be aware of the **various legal and privacy concerns** related to interventions into the digital worlds of students, such as blogs and social media platforms. This also applies to general privacy issues related to digital media.
- Teachers can benefit from **upskilling their teaching repertoire** to meet the needs of education in the digital world. This includes gaining competences to work with video and podcasts, online research and interviewing, gaming, social media campaigns, storytelling, and tackle online hate speech and cyberbullying. This also applies to furthering one's knowledge about key issues connected to the digital universe such as 'Fact Resistance', 'Truth Bias', 'echo chambers' 'confirmation bias', 'identity threat', 'backfire effect' and 'illusion of truth', 'cheap fakes' and 'deepfakes'.
- Discussions relating to disinformation, for instance discussions about conspiracy theories, can be controversial and provoke (strong) emotions. This implies having **sufficient knowledge about how to effectively introduce and facilitate controversial** issues. In many cases this goes hand in hand with the ability to create a safe place in the classroom where students feel comfortable expressing their opinions and the ability to guide discussions effectively. School psychologists and social workers also play a role here.
- Relevant NGOs can support teachers in the work around disinformation and digital literacy.
- In the area of digital literacy, **students are well positioned to co-create a variety of digital materials and learning resources**, and to disseminate the outcomes of their creative work. Traditional educational approaches are less effective in such instances. Teachers can guide and empower their students in this process. **Students teaching other students** (peer education) is also a valuable approach
- Digital literacy is best accomplished if **student work starts from their interests**, using devices they are most familiar with. This will help them become lifelong learners and responsible citizens, as well as positive social actors. **Colleagues, parents and the wider community have the potential to play a role** in this process in a joint effort.
- **Feedback loops between teachers and the research community** promote reflection and learning. The development of digital literacy is best informed by the latest scientific knowledge.

Conclusions and Recommendations for the initial and continuous teacher education training

- Presently, ITE (initial teacher education) courses focusing on digital literacy are often optional.

Given the critical role that digital literacy plays in contemporary learning, it is important that **digital literacy courses become more prominently integrated into ITE**. Ideally, all ITE programmes and courses would contain such elements.

- The DigCompEdu framework, which describes what it means for educators to be digitally competent and identifies 22 key competences, can serve as an excellent starting point for all ITE and continuous teacher professional education (CPD).
- In addition to integrating elements of digital literacy into all ITE courses, a specific course on **combating disinformation, building resilience, as well as digital and information literacy is recommended** as a separate course in all ITE institutions. Such a course should be a compulsory part of all teacher education programmes.
- Continuous **teacher professional development should be based on active learning** and should be situated, extended in time, participatory, and linked to educational practice. CPD opportunities should align with the needs of both schools and national educational frameworks.
- More attention needs to be devoted to the **training of teacher educators and professional development providers**, since they are multipliers.
- Any ITE or CPD related education needs to **make use of engaging materials and approaches that have demonstrated their value, especially through evaluation**, while allowing for flexibility due to cultural and other situational factors. Materials and approaches should also be age appropriate.
- ITE and CPD can benefit by **connecting teachers and educators to existing initiatives that promote digital literacy at the national and international level**. This would promote the sharing of experiences and support transferability of good digital literacy practices across the EU.
- Solid **measurement instruments are needed to assess baseline levels** of digital literacy among both teachers and students.
- Digital literacy is a complex phenomenon, and **simplistic assessment instruments should be avoided**. Schools, teachers, and students can benefit from clear assessment guidelines that are subject sensitive. The use of standard assessment standards can promote better understanding of where gaps exist and where further efforts and measures are needed to address gaps.
- Teachers need **specific training and guidance relating to how they can best assess the progress** that their students are making in terms of their digital literacy competences.
- Teachers would benefit from specific training relating to how they can best assess their own digital literacy, and their own progress in digital literacy.
- The **systematic evaluation of students' digital literacy skills** at regional/national/EU level would be useful. This will make it possible to compare and follow developments on an aggregated level.

1. Background of the report

This background chapter introduces the reader to the purpose and rationale of the informal European Commission Expert Group on tackling disinformation and promoting digital literacy through education and training, as well as some of the key definitions in the field of digital literacy and disinformation as related to education and training.

Purpose

The [Digital Education Action Plan \(2021-2027\)](#) of the European Commission¹ called for an action to develop guidelines for teachers and educators to tackle disinformation and promote digital literacy through education and training, stressing the key role education and training plays in equipping young people with the skills needed to live and thrive in the digital age. The Commission therefore launched a dedicated Expert Group on tackling disinformation and promoting digital literacy through education and training² to support the development of the guidelines.

This report represents the efforts of the 24 members of the Expert Group from Member States across the European Union, facilitated by two external experts and staff from the European Commission (the Secretariat). The official activities included in this report took place from October 2021 through April 2022. All experts have extensive expertise in tackling disinformation and promoting digital literacy through education and training.

The report brings together the main insights produced by the Expert Group regarding both challenges and potential solutions for this emerging and complex field. Although many parts of the document can be useful as a stand-alone overview of the field, it is primarily intended as a key resource and background in the development of guidelines for teachers and educators, a second and final outcome of the Expert Group. The target audience is policymakers at EU, national and regional level, civil society, academia, the education and training community, and interested citizens.

The work of the Expert Group reflects the evolving expertise around the dynamics of contemporary mass media, digital literacy and efforts to combat disinformation through education and training, as well as the growing need to develop guidelines for educators involved in fostering digital literacy and tackling disinformation in their classrooms. The concept of digital literacy connects closely to related concepts such as digital media literacy, media literacy, and data and information literacy. In line with the [Digital Education Action Plan \(2021-2027\)](#), we use the concept of digital literacy in this report, with the understanding that various international reports and authors refer to digital media literacy, information literacy and media literacy when addressing similar issues.³

¹ See Digital Education Action Plan (2021-2027) [here](#).

² The members of the Expert Group were selected through a [published call](#) for experts, open 30 May-29 June, 2021.

³ Digital media can also be considered one aspect of contemporary mass media phenomena.

Rationale

As presented in the Digital Education Action Plan (2021-2027), the effective use of digital learning technologies and resources in education and training is considered to be a key enabler related to realising the vision of achieving a European Education Area by 2025.⁴ The Digital Education Action Plan places particular emphasis on the importance of making digital learning inclusive, while recognising that effective use of digital technologies can provide learning that is more personalised, interactive and tailored to the needs of the learner.

Dynamic and accelerating advancements in the world of digital technologies (e.g. bots, virtual environments, holograms, digital assistants and AI augmented reality), as well as increased internet use, have fuelled the debate on the importance of preparing young people to access, use, understand and critically assess all forms of media. This is all the more important when, according to a survey conducted in 2020 by the EU Kids Online network, young people aged 9-16 spent an average of almost three hours (2.8 hrs) online each day. In some Member States such as France, Germany, Italy, Portugal and Spain, this average had doubled or nearly doubled since 2010.⁵

As the Digital Education Action Plan highlighted, communication across geographical, linguistic and cultural borders has never been so easy and immediate. Access to digital technologies promotes both unparalleled social and educational opportunities as well, for instance, the connections between digital learning, empowerment and an 'inclusive' future. The ability and right of people to access and benefit from a large range of information sources is key to the functioning of democratic societies, as it allows for the exchange of divergent opinions and ideas. The effective and responsible use of digital learning technologies and resources is a key tool for lifelong learning and to help young people become active and responsible members of society. It is important to educate young people about digital technologies, not only relating to how technology systems work, but also on the impacts of digital technologies, especially impacts related to individual well-being.

In parallel to many opportunities, the rapid and pervasive emergence of digital technologies potentially exposes (young) people to a plethora of online threats on a regular basis. These include disinformation, misinformation and political propaganda, conspiracy theories, cyberbullying, recruitment efforts by extremist organisations, cyber predators, phishing, scams and malware. There is evidence that people of all ages are increasingly at risk (Makosa, 2013) and that they are being exposed to various forms of disinformation (i.e. what is colloquially referred to as 'fake news'). Information overload and the lack of effective ways to filter information poses another challenge. This challenge makes it necessary for individuals to be able to critically approach, assess and verify information in order to become more resilient to threats. At the societal level, the online manipulation of information (which is increasingly sophisticated and easily disseminated) has affected people's trust in mainstream media and reliable sources of information. Human vulnerabilities are exploited to undermine political institutions, public opinion and the quality of democratic debate across the EU and elsewhere.⁶ There is early evidence to suggest that increasing exposure to disinformation can prevent people

⁴ Ibid.

⁵ Source: EU Kids Online 2020 Survey results from 19 countries. The EU kids Online Network (2020). It is also worth noting that in 2019, 94 % of young people in the EU-27 made daily use of the internet (see: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Being_young_in_Europe_today_-_digital_world).

⁶ Issues such as internet neutrality, freedom of speech and responsible journalism also come into play.

accepting facts altogether and can cause people to doubt the very value of science and scientific evidence (Leiserowitz et al., 2017).

Educational institutions are in a unique position to help educate young people about the threats identified above. Schools and other educational institutions have received a societal mandate to educate future generations. Due to the constant exposure of young people to the digital universe, those involved in education and training have an important task to stay abreast of an ever-changing environment and equip young people with the critical thinking skills required to exercise judgment, analyse complex realities and recognise the difference between opinion and fact. Education thus has a crucial role to play in helping young people strengthen the competences needed to successfully navigate the digital world they encounter on a daily basis. Such efforts need to take into consideration the many peculiarities of the online world, such as algorithms, information or filter bubbles and echo chambers.⁷ Developing such competences can empower young people to benefit from, and contribute to, the world of online debate and discussion. It can help them critically engage with information on the one hand, and create and share their own content, on the other.

The importance of promoting digital literacy among school students has been underlined by the European Commission⁸, UNESCO⁹, the OECD¹⁰ and the Council of Europe¹¹, among others. All recognise that formal and non-formal education, as well as training, can play a critical role in expanding awareness of how to tackle disinformation, promote online safety and contribute to fostering critical thinking skills among students. These are essential when navigating the online world. Digital literacy education has been further shown to contribute to tackling online radicalisation, as well as being an effective intervention strategy to prevent both online and offline violence (Grizzle et al., 2014).

Fowler-Watt and McDougall (in press) note that competences are not enough and that what is truly needed is a sustained process of digital literacy building, rooted in a critical mind-set and a desire to access and diversify trustworthy media ecosystems. This implies, according to these authors, a long term, sustainable, educational and civic project within democratic values.

Working Definitions

Experts may differ on the various definitions and concepts used in the broad field of digital literacy, depending on their theoretical background, be it in education, psychology, sociology, media studies or another orientation. It was not the intention for the Expert Group to reflect on definitional issues. Instead, the proposed definitions below are based on existing EU and internationally recognised ones, adjusted however for the purposes of the activities of the Expert Group.

⁷ Filter bubbles refer to online environments where individuals only see posts that they agree with. Echo chambers have been defined as 'environments in which the opinion, political leaning, or belief of users about a topic is reinforced due to repeated interactions with peers, or sources having similar tendencies and attitudes. Please see Kitchens, B., Johnson, S. L., & Gray, P. (2020) [here](#), and Cinelli, M., Morales, G. D. F., Galeazzi, A., Quattrociocchi, W., & Starnini, M. (2021) [here](#).

⁸ See the [Digital Literacy Strategy of the European Commission](#).

⁹ See, for instance UNESCO (2021) [here](#):

¹⁰ See, for instance OECD (2022) [here](#).

¹¹ See the [Digital Citizenship Initiative](#) of the Council of Europe.

Digital literacy: Digital literacy is the ability to access, manage, understand, integrate, communicate, evaluate, create and disseminate information safely and appropriately through digital technologies. It includes competences that are variously referred to as information literacy and media literacy, computer and ICT literacy. Digital Literacy involves a dimension of active and civic engagement with the digital world and promotes active citizenship.¹²

Media literacy: While there are many components to media literacy, a concise definition is ‘ability to access the media, to understand and critically evaluate different aspects of the media and media contexts, and to create communications in a variety of contexts.’¹³

Media and Information literacy: Considering it a public good, UNESCO has defined this term as the ‘ability to understand information for public good; the ability to critically engage with information, media, and digital communication for participation in sustainable development goals; and the ability to seek and enjoy the full benefits of fundamental human rights’.¹⁴

Digital pedagogy: Digital pedagogy refers to the use of innovative digital tools and conceptual approaches. It is intended to support adaptive and personalised learning and contribute to the design of new creative modes of learning, enrichment of learning experiences and improvement of learning outcomes. UNESCO notes that digital pedagogy values open education, including open educational resources.¹⁵

Disinformation: Disinformation (commonly referred to as ‘fake news’) consists of verifiably false or misleading information that is created, presented and disseminated for economic gain or to intentionally deceive the public that may cause public harm.¹⁶ Disinformation should not be confused with **misinformation**, which is verifiably false information that is spread without the intention to mislead, and often shared because the user believes it to be true. **Malinformation** is a third concept, different to disinformation and misinformation, and typically refers to factually correct information that is used harmfully.¹⁷

Nevertheless, the spread of disinformation, misinformation and malinformation can have a range of detrimental consequences for young users but also at a societal level, such as threatening our democracies, polarising debates, and putting the health and security of EU citizens at risk.

¹² This definition is inspired by the UNESCO definition presented here: [UNESCO’s A Global Framework of Reference on Digital Literacy Skills for Indicator 4.4.2](#). We have removed the phrase ‘for employment, decent jobs and entrepreneurship’ and added the component: ‘Digital Literacy involves a dimension of active and civic engagement with the digital world and promotes active citizenship.’

¹³ European Parliament, 2008. AN OVERVIEW OF MEDIA LITERACY; which can be accessed [here](#).

¹⁴ UNESCO, 2021, Media and information literate citizens: think critically, click wisely!; which can be accessed [here](#).

¹⁵ UNESCO, 2022, Unit of Digital Pedagogy and Learning Materials; which can be accessed [here](#).

¹⁶ European Commission, 2022, Tackling disinformation; which can be accessed [here](#).

¹⁷ Annenberg School for Communication, *Understanding and Addressing the Disinformation Ecosystem*, Philadelphia, 2018; which can be accessed [here](#).

2. Key themes relating to disinformation and digital literacy

The following four subchapters reflect key challenges, as well as potential solutions, relating to the combating of disinformation and the promotion of digital literacy, as identified by the Expert Group. These subchapters focus on the following themes:

2.1. The nature of disinformation and ways to tackle it. Subchapter 2.1 focuses on the nature of disinformation. It first provides some general background information on disinformation and then describes how modern means of communication and knowledge sharing, especially in the digital world, such as social media, have shaped it. It highlights several key potential approaches to address false information online (especially prebunking and debunking), as well as tools and strategies to verify information in formal and non-formal learning contexts.

2.2. Key dimensions of digital literacy. This subchapter provides an overview of some of the common and emerging components of digital literacy programmes in education and training contexts in Europe, which the literature in this area suggests may be central to the successful development of digital literacy. It highlights several key approaches and initiatives that promote digital and media literacy in Europe.

2.3. Needs analysis and context from a teacher/educator perspective: This subchapter focuses on the role of teachers in promoting digital literacy and countering disinformation, looking at both initial teacher education (ITE) and continuing professional development (CPD). It includes a discussion of where and how teachers can be supported in developing the digital and media literacy competences they themselves and their students need, and how developing such competences can be embedded in courses offered in teacher training colleges and CPD programmes. The chapter also addresses effective learning opportunities in the classroom, what this entails for teachers and the role of students, parents/guardians and families in this process.

2.4. Key approaches across Member States to counter disinformation and to promote digital literacy in education. Subchapter 2.4 offers insight into various initiatives and approaches that have been taken within and across Member States to promote digital literacy and tackle disinformation.

Each thematic chapter includes inspiring practices identified by the Expert Group.

F A

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2.1. Theme 1: The nature of disinformation and ways to tackle it

Disinformation in the 21st century

In today's world, disinformation spreads significantly farther, faster, deeper and more broadly than real news (Vosoughi, Roy & Aral, 2018; Pennycook & Rand, 2018). This can partly be explained by psychological factors that play a major role in influencing the ways in which people trust and disseminate news. Such factors include a person's social identity (Pereira et al., 2021), level of reasoning and relevant knowledge, as well as his or her familiarity with an information source (Pennycook & Rand, 2021). Research in the field of psychology shows that unless we have a reason to doubt a news story, we tend to accept it as real, trusting our intuitions (Schwarz & Jalbert, 2021). Disinformation furthermore deliberately plays into people's basic emotions, such as fear, anger, or empathy, making it more difficult to combat.¹⁸ It has also been noted that often people seem to be 'lazy not biased' when it comes to sharing disinformation (Pennycook & Rand, 2019).

Traditionally, the information environment¹⁹ has been primarily shaped by journalists (trained in schools of journalism) who acted as gatekeepers. They were expected to demonstrate social and professional responsibility and ethical behaviour. In some instances, sanctions could be imposed. Presently, with the proliferation of digital devices and the emergence of online media, access to information and opinions has become much broader, less transparent and less controllable. Almost anybody can disseminate information and opinions to the outside world at any time and from any location, and this can be done anonymously. While some disinformation can be relatively harmless, the widespread use and circulation of disinformation can 'undermine the public's ability to identify desirable policies, their desire to engage in politics and their sense of the very legitimacy of democratic governance' (Kahne & Bowyer, 2017, p. 4).^{20 21}

The ability for just about anybody to disseminate information has in theory provided the potential for the voiceless to have a voice and allowed a broad range of opinions to be heard. The potential for spreading rumour, gossip and disinformation, however, has never been greater. Also, the profit model of some technology companies serves as a disincentive to take action against disinformation. The algorithms used by such companies to help users find information can amplify disinformation.²² The spread of disinformation is further fuelled by the fact that online platforms do not fall under the formal definition of publishers, which implies that standard media regulations do not apply to them.²³

¹⁸ See for instance Van der Linden, S., & Roozenbeek, J. (2020) [here](#) and Martel, C., Pennycook, G., & Rand, D. G. (2020) [here](#).

¹⁹ It should be noted that the information environment is much broader than the media and includes for instance scientific information and library sciences. In schools it also includes online learning materials and textbooks. Here we focus on media sources of information, including social media.

²⁰ See also definition above.

²¹ The European Commission has noted that 'the risk of harm caused by disinformation includes threats to democratic political processes and values.....and is driven by the production and promotion of disinformation for economic gains or for political or ideological goals.' (p. 11) A link to this document can be found [here](#).

²² See for instance the EDRi article (2021) [here](#).

²³ Lambert (2021) has noted that the advent of social media has led to the regulation of mediators becoming less effective, since there is limited mediation. The main victim of this new model, according to this author, has been rationality (science and evidence-based storytelling). In the realm of social media, facts and opinions are frequently mixed: the emergence of so-called 'alternative facts' has been the result of this approach (Nicita, 2021).

The European Commission has noted that ‘while technologies offer new and easy ways, notably through social media, to disseminate information on a large scale and with speed and precision, they can also be used as powerful echo chambers for disinformation campaigns. Disinformation erodes trust in institutions and in digital and traditional media and harms our democracies by hampering the ability of citizens to take informed decisions. It can polarise debates, create or deepen tensions in society and undermine electoral systems, and thus have a wider impact on European security.’²⁴

Accordingly, the EU is taking steps to regulate online platforms (see Box 1 below).

Box 1 : Some EU initiatives to regulate online platforms

There are several ongoing initiatives, based on human rights considerations, taking place in the EU and in Member States to regulate online platforms. These initiatives ensure a trustworthy, transparent and safe online environment for users.

- The [European Commission's Code of Practice](#) is a tool that ensures greater transparency and accountability of platforms’ policies on disinformation. The Code is currently undergoing a major revision, which will further strengthen platforms’ commitments on matters such as empowering users to recognise disinformation. The revised Code will feature a comprehensive and transparent monitoring system that will allow an independent verification of the effectiveness of platforms’ actions.
- The [European Democracy Action Plan](#) (2020) is designed to empower citizens and build more resilient democracies across the EU. The three main pillars of the Plan are 1.) promoting free and fair elections; 2.) strengthening media freedom; and 3.) **countering disinformation**.
- [The Digital Services Act](#) (DSA) and [Digital Markets Act](#) (DMA) aim to create a safer digital space where the fundamental rights of users are protected, and to establish a level playing field for businesses. These regulations balance the responsibilities of users, online intermediaries and public authorities, placing European citizens at the centre. They ensure a greater democratic oversight over systemic platforms and include provisions aiming to mitigate online risks such as manipulation and disinformation.
- [The European Media Freedom Act](#) (EMFA; in progress, to be proposed this year) will complement the EU legislative framework with specific measures to safeguard media freedom and pluralism, and the integrity of the EU internal market. The aim is to work towards a thriving EU media market based on common standards on transparency, pluralism and independence as well as regulatory convergence and cooperation. With EMFA, the Commission intends to propose a carefully calibrated framework, which is also complementary to well-functioning national systems. The initiative is aligned with the EU's efforts to promote democratic participation and support media freedom and pluralism, as set out in the Democracy Action Plan. It also complements the Digital Services Act package.
- Being the first in the world of its kind, [the Commission proposal for European Declaration on Digital Rights and Principles](#) offers a citizen centric approach to digitalisation by establishing inclusion, participation, empowerment to choose, safety and sustainability as core values in the digital environment. The aim is to ensure that the values of the Union and the rights and freedoms of individuals are applied both offline and online.

²⁴ Europa nu (2018) Tackling online disinformation; which can be accessed [here](#).

While the advent of digital media has the potential to allow exposure to alternative views and multi-perspectives, it also tends to limit exposure to other opinions. People can enter closed virtual worlds where they can interact exclusively with like-minded people and receive information exclusively tailored to their interests. An individual can now work, study, entertain, shop and interact with others online without encountering those with another worldview. The earlier mentioned concepts of filter bubbles and echo chambers reflect this.

Digital channels such as social media offer vast opportunities to communicate with others in unfiltered ways, but often limit exposure to other viewpoints. Schwarz and Jalbert (2021) note that:

'In many ways, one might think that social media were designed to make questionable messages seem true. (...) most social media messages are short, written in simple language, and presented in optics that are easy to read, which satisfies many of the technical prerequisites for easy processing. These fluent messages are posted by one's friends, a credible source. The content they post is usually compatible with one's own beliefs, given the similarity of opinions and values in friendship networks.' (p. 81).

In addition to less exposure to alternative views, the pattern has been for public discourse to shift away from fact-based evidence (science, knowledge, expertise, etc.) to more opinion and emotion-based approaches. This can potentially lead to polarisation and conflict. The use of algorithms connects well to human emotions by identifying preferences and amplifying them through 'likes' and 'clicks', and serves the business model of social media. This business model often fuels polarisation and conflict. Social media users rarely question the process by which algorithms work (Zuboff 2022, Hao, 2021; Mozur, 2018).

Box 2: Conspiracy theories

Present day disinformation has frequently been characterised by a wide variety of **conspiracy theories**. Education about the dangers of conspiracy theories is commonplace, but several studies have shown that mere exposure to conspiratorial discourse, even when conspiratorial claims are dismissed, often makes people less likely to accept more accurate information. (Lewandowsky et al., 2017). It is also difficult to disprove conspiracy theories since they reduce highly complex issues to simplistic explanations and causes.

The nature of disinformation, however, is not static and has undergone change. This requires the educational community to remain vigilant and up to date, so that students (and teachers) can remain resilient to disinformation across time and contexts. There are indications that disinformation has become:

- less detectable;
- more aggressive in reaching its target audiences (sometimes called 'sensitive audiences');
- more (semi) automatically created;
- more elusive regarding content-moderation;
- enhanced by algorithms;
- increasingly focused on and created within groups;
- scattered across numerous platforms;
- spread on encrypted channels and platforms;

- increasingly present on platforms with little to no-existing community standards;
- spread in a top-down manner;
- streamed online (Garcia-Camargo & Bradshaw, 2021).

The consequence of the above, according to the World Health Organization (WHO), is the infliction of serious damage to society. This could be seen during the so-called ‘infodemic’ emerging from the COVID-19 crisis (WHO, 2021).

Though harmful disinformation can target a variety of people and communities, a report for the European Parliament notes that: ‘Disinformation poses a particular threat to minority groups that are vulnerable to victimisation and discrimination.’²⁵ In some instances, disinformation can be used to condone or promote violence. For instance, the [European Digital Media Observatory](#) (EDMO)²⁶ documented the vast amount of politically motivated disinformation in February and March 2022 being spread about the ‘military actions against the whole Ukraine.’ A significant amount of disinformation either denied or justified extreme violence based on false information. Various fact-checking organisations have, in response, become active in examining truth claims about the conflict.²⁷

Disinformation technology and psychology

The increase in sophistication that characterises the technology supporting the spread of false information in the digital universe is profound. Research shows how young people struggle to determine the credibility of texts, images and videos when these are presented in deceptive ways (Breakstone et al., 2021; Ku et al., 2019; Nygren & Guath, 2019, 2021). This problem has worsened with the use of new and advanced digital communication technologies including bots, self-writing algorithms, cheap fakes and deep fakes.

The phenomena above exploit a variety of common psychological mechanisms, such as fact resistance, truth bias, confirmation bias, identity threat, backfire effect and the illusion of truth (see Box 3).

Box 3: Common psychological mechanisms that relate to disinformation

- **‘Fact resistance’** (Hendricks and Vestergaard, 2018) is the reluctance to accept a fact even though there is evidence for it.
- **‘Truth bias’** (Pantazi, Kissine and Klein, 2018) means that it is easier to accept a statement than to reject it, even if we are told that a source is unreliable.
- People tend to look for confirmation of what they already believe, which is the so-called **‘confirmation bias’** (Nickerson, 1998).

²⁵ See European Parliament (2021) *The impact of disinformation campaigns about migrants and minority groups in the EU*, which can be accessed [here](#).

²⁶ EDMO is an independent institution that supports the creation of a cross-border and multidisciplinary community of independent fact-checkers and academic researchers, who collaborate with relevant stakeholders in detecting, analysing and exposing potential disinformation threats.

²⁷ See, for instance the work of [hive mind](#).

Box 4: Common psychological mechanisms that relate to disinformation

- When one's group's affiliation prevents us from seeing the whole picture it is called '**identity threat**' (Nyhan and Reifler, 2018). Opinions are partly shaped by group affiliation and social identity. Therefore, counter-evidence risks creating a '**backfire effect**' under certain circumstances (Lewandowsky, Ecker, Seifert, Schwarz and Cook, 2012). This effect refers to beliefs sometimes being strengthened when they are questioned. It still remains unclear under what circumstances and among which individuals the backfire effect actually takes place.
- '**Illusion of Truth**' refers to the process that if a statement is repeated often enough, we believe it (Wikforss, 2017).

With deep fakes (videos that appear authentic but show a fictional reality) it has become exceptionally difficult to distinguish between fact and fake, even for the well-trained eye (Köbis et al., 2021). This is especially true when the false information is disguised in scientific vocabulary (Alea, 2022). A report for the European Parliament²⁸ from 2021 also noted the deleterious nature of deep fakes²⁹: the development of deep fake technology threatens the field of journalism and is a new dimension of disinformation. They conclude that deep fakes 'have a malicious, deceitful and even destructive potential at an individual, organisational and societal level.'³⁰ Among the negative societal impacts, the report mentions:

- damage to democracy;
- manipulation of elections;
- damage to international relations; and
- damage to national security.

Deep fakes can be seen as simply 'a new technological expression of a much older phenomenon.' However, that perspective would fall short when it comes to understanding their potential societal impact. The deep fakes used around the military attack in Ukraine in the spring of 2022 are but one example of how they can become a political weapon. In general, deep fakes find fertile ground in both traditional and new media because of their often-sensational nature³¹. Several scholars have also noted that there is a risk of a 'liar's dividend' where people in an era of deep fake learn not to trust real evidence (Chesney and Citron, 2018).

Tackling disinformation

Disinformation is not only a question of detection but calls for learning processes that provide children and young people with a critical mindset – giving them an understanding of how the media has evolved historically, its purpose in society, as well as how it has been used and abused. Such understanding also includes the media being used as a political tool for instance for propaganda purposes. Furthermore, addressing disinformation

²⁸ European Parliament, 2021, Tackling deepfakes in European policy, which can be accessed [here](#).

²⁹ Deepfakes can be contrasted with cheap fakes. Deepfakes rely on machine learning and represent one end of a spectrum of audiovisual AV manipulation. The deepfake process is both the most computationally-reliant and also the least publicly accessible means of creating deceptive media. Cheap fakes rely on cheap, accessible software, or no software at all. See Paris, B., & Donovan, J. (2019) [here](#).

³⁰ European Parliament, op.cit., p. IV.

³¹ Ibid., p III.

goes beyond solutions that focus on rational thought and cognition only – it involves human emotions as well (Allcott et al., 2017).

It is a difficult task to verify the validity of information spread online. Most people do not have the time, skills or resources to verify information themselves. Nevertheless, the most effective way to verify information, according to Waters (2020), is to empower users of all ages and to promote the development of their media literacy competences. People should be able to distinguish between the professional standards upheld by regulated mass media sources and the output of social media sources that are far less regulated by media laws and abide far less to professional standards. Such empowerment also has the aim of protecting the most vulnerable groups, such as children.

Perhaps the most common approach to countering disinformation more professionally is fact-checking.³² It has been shown that school activities, in which school students engage in fact-checking, leads to an improved ability to judge the credibility of digital content (Wineburg et al., 2022). Fact-checking is a task that can be done by algorithms, by professionals or by people with in-depth knowledge of a certain issue, and then shared with the broader community. A good deal of fact-checking in education makes use of so-called lateral reading strategies.³³ Lateral reading consists of comparing a source with other sources relating to the same topic, in addition to merely checking the source itself. This can be done in both formal and non-formal education by students and other learners. Proper fact-checking, carried out by teachers (with their students), is a multi-layered process due to its complexity and requires training. In short, such competences do not ‘come naturally’.³⁴

Box 5: Media monitoring operations

Media monitoring operations initiatives - aimed at promoting awareness of the situation – can make use of various analytical models. A good example is a modified Lasswell’s construct (Arcos, 2018; Yu, Jin, Zhai, Ni & Wang, 2021):

1. Who says what?
2. On behalf of whom (or on its own behalf)?
3. With what intentions?
4. In what situations?
5. With what assets?
6. Using what strategies (key messages and channels)?

Though students today are often immersed in new media and have a great deal of experience with the digital world, they do not necessarily know how to act in a safe manner on social media. They often lack the ability to engage in critical thinking or reflect on the ethical dimensions of their online actions. Effective approaches to encourage these aspects include ‘learning by doing’ and interactive, student-centred methods that provide them with the possibility to ‘experience facts’.³⁵ In such cases, the students play an active role in their own learning supported by teachers and updated teaching materials.

Despite the widespread use of fact-checking, it alone cannot replace the value of strengthening certain media competences, such as the development of

³² An interesting initiative is the annual [International Fact Checking Day](#), which started in 2014. Also noteworthy is: [The International Fact-Checking Network](#) (IFCN) at Poynter was launched in 2015.

³³ Lateral reading, according to researchers at Stanford University, refers to an approach in which people evaluate ‘where information comes from to decide whether it is trustworthy, which implies leaving a site to see what other digital sources say about it’. See [link](#).

³⁴ See Wineburg, S., & McGrew, S. (2019) [here](#).

³⁵ See Tan, L., & Kim, B. (2015) [here](#).

critical thinking and an awareness of the kinds of threats that may not be subjected to quick verification.³⁶ Furthermore, initiatives that combine being exposed to disinformation with an alternative explanation as an approach, and those that explain why disinformation was disseminated (motives) are reported to be more effective than simple fact-checking and appeals to credibility alone (Walter & Murphy, 2018).³⁷ It should be noted that there is initial evidence that the frequently-used approach of exposing people to counter/alternative narratives can actually be counterproductive for certain target audiences (such as those who are prone to accept extremist views), though on the whole they can have a positive impact on people.³⁸ There is also some evidence³⁹ that the use of such alternative/counter narratives can especially (positively) impact those ‘on the fence’ or those in the ‘movable middle’– expressions that refer to individuals who do not hold firm beliefs in any direction.

In a recent research paper, Roozenbeek & van der Linden (2021) identify several key approaches to tackling disinformation, including prebunking and debunking.⁴⁰

Box 6: Effective resources for countering disinformation

Prebunking materials:

- [Bad News Game](#)
- [Breaking Harmony Square](#)
- [Go Viral](#)
- [Loki's Loop deepfake Escape Room by Washington University Information School](#)

Materials promoting digital fact-checking and/or media literacy:

- [The News Evaluator](#)
- [Civic Online Reasoning](#)
- [YouVerify](#)
- [‘News Challenge’ by Lie Detectors](#)
- [‘Quelle: Internet?’ by Stiftung Neue Verantwortung](#)
- The EU-funded [Better Internet for Kids](#) platform

Prebunking is defined as a pre-emptive refutation of the persuasive argument.

³⁶ For instance, ‘breaking news’ events are difficult to be fact-checked due to lack of reliable data, highly specialised topics can be out of reach for fact-checkers who are not knowledgeable in a particular domain.

³⁷ Examples of such initiatives are: [News Evaluator](#) by Uppsala University, [Civic Online Reasoning](#) by Stanford University and [YouVerify](#) by Savoir Devenir.

³⁸ In a [study](#) examining counter narratives to address support for ISIS it was found that counter narratives had a mild positive impact in general, but that exposing people to counter narratives who were at greater risk of radicalisation was counterproductive and enhanced their support for ISIS.

³⁹ Euractiv (2020) Policy-makers should develop ‘vaccine’ against disinformation about migrants, which can be accessed [here](#).

⁴⁰ The authors also refer to the concept of the often-cited approach of **Inoculation**. This ‘prevention is better than a cure’ approach, closely connected to prebunking, is based on so-called ‘Inoculation Theory’ and refers to the potential to develop a kind of psychological ‘vaccine’ or ‘anti-bodies’ against false information, preparing the individual for future disinformation.⁴⁰ Examples include games, videos, and infographics.⁴⁰ It has been noted that initiatives based on inoculation theory are a promising approach but not a cure-all.⁴⁰ This is partly because they are short term solutions.

Debunking, contrary to prebunking, happens after the fact. It aims to rectify already presented information and refers to the intention to clarify the primarily false information presented and thus force the recipient to think more deeply about the published facts (Kvetanová & Kačincová-Predmerská & Švecová, 2020). It aims to rectify already presented information.

There is some initial evidence of potential actions that can be taken in order to ensure the efficacy of debunking. For instance, targeted and well thought-out prebunking campaigns require solid media monitoring capacity, proper knowledge of target audiences and sensitive groups, foresight and risk analysis, and a good grasp of human psychology.⁴¹

Inspiring practices in Europe related to understanding the nature of disinformation and ways to tackle it

1. In Denmark, the teaching material '[Fake bombing or fake news?](#)' takes classrooms back in time to World War II, and introduces students to how and why propaganda is used. As part of the exercise, students watch two films that each report a school bombing very differently, using different narratives and with contradictory accounts of what happened.

2. In Germany, the social media awareness campaign [#TrueStory by the Vodafone](#) Germany Foundation reached more than a quarter of the German youth population within three months by placing short educational video messages on disinformation on various social media channels. The campaign showed the effectiveness of using highly frequented digital spaces as 'on-the-go' spaces of learning and critical reflection for young people.

3. Also in Germany, [Journalismus macht Schule](#) is an alliance of media houses, teachers, teacher-trainers and academics. It works closely with schools and journalists.

4. In Romania, the [Fake news challenge for Romanian youth](#) with the slogan 'Disinformation under a magnifying glass' aims to develop young people's digital skills, and to help them understand the digital media ecosystem and to recognise how disinformation manifests itself in public discourse.

5. In Poland, high school students were consulted in order to produce a 'practical guide' on how to combat disinformation. The process demonstrated that humour is a powerful element to improve the attractiveness of tools and that involving students helps make guidelines more engaging.

6. In Finland, [Faktabaari](#) is an award-winning Finnish fact-checking service that brings accuracy to public debates. The non-partisan journalistic service uses social media to collect and distribute pedagogical fact-checks.

7. In France, the [Guidelines for media and information literacy](#) provides advice to teachers in terms of learning objectives and proposed general tasks in order to develop media and information literacy. The guidelines are split by cycle of education (Cycle 2 and Cycle 3) with different objectives for each cycle.

⁴¹ See: van der Linden & Roozenbeek & Compton (2020).



2.2. Theme 2: Key dimensions of digital literacy

Recent decades have seen a proliferation of programmes and initiatives to build digital literacy across Europe, alongside a rapidly growing scholarly literature on digital and media literacy. An understanding of what developments and trends have taken place, what has worked well, and where the field currently stands is a necessary basis for identifying priority areas for moving forward.⁴²

What is meant by digital literacy?

Frequently, the concept of digital literacy is seen purely in terms of individuals developing knowledge, skills and competences to navigate the digital universe. Rather than being an end in itself, digital literacy (see Chapter 1 – Working Definitions) provides a path towards achieving broader goals. The main purpose of digital literacy education can be seen as helping individuals of all ages develop the competences needed to become better critical thinkers, effective communicators, and active and empowered members of today’s society. Strengthening digital literacy can also be seen as a more comprehensive way of coping with disinformation. Media, in all its forms, has been referred to as the connective tissue of democracy, and through gaining competences in digital literacy and digital citizenship young people can fully participate in key democratic processes in their communities and in society (Wunderlich & Hölig, 2022).

Since digital literacy is part and parcel of developing the insights and competences that people need to become informed and active participants, there is a clear connection to citizenship and civics education. The strengthening of such competences also needs to include a basic knowledge of technology: for example, how do internet and communications technologies work, how are they applied in education and society, what are the mechanisms behind algorithms and what are some key privacy issues? (Ferrari, 2013).

Box 7: Closing the digital divide

A key issue relating to promoting digital literacy is **access to digital technology**, in and outside of the classroom. Various studies have shown that a digital divide continues to exist across Europe. Especially in times of crisis, such as the COVID-19 pandemic with school disruptions in most countries, special provisions and policies needed to be taken to ensure mass digital access to remote school education. In Greece, for instance, such measures were facilitated through the [White Paper on Digital Transformation 2020-2025](#). The aim was to leapfrog into a much more ambitious growth trajectory in the future (Andriopoulou & Panagiotou, 2022). The policy included a National Coalition for Digital Skills and Employment that specifically targeted the: ‘launching of actions to [...] address the digital divide in all sectors of the Greek economy and society’, including the education sector.

⁴² For a current systematic meta-study on the effects of digital literacy and media literacy intervention in the German speaking context, see Wunderlich & Hölig (2022).

Digital literacy programmes

Digital literacy programmes vary in size, links to formal education, level, duration and purpose. However, they all provide resources or specific training that are either designed for, or can be used in, formal educational contexts by both teachers and external partners.

A first conclusion from the research on digital citizenship is that programmes to promote digital literacy ‘do work’ – *if* done well. For instance, Kahne and Bowyer (2017) conducted a study to assess to what extent exposure to digital literacy made people better able to assess the accuracy of information they encountered in the media. Their results conclusively showed that, in general, people who reported limited digital literacy education were less able to recognise biased information. Those who reported the most digital literacy learning experiences were more successful in distinguishing between evidence-based content and content with disinformation. The authors concluded that ‘individuals who reported high levels of media literacy learning opportunities were considerably more likely to rate evidence-based posts as accurate than to rate posts containing misinformation as accurate – even when both posts aligned with their prior perspectives.’

Developing digital literacy is multifaceted and a dynamic process. One is never fully literate in an ever-changing environment. Both literature and practice increasingly recognise digital literacy not as a singular concept but as complex and multi-modal. Successful digital literacy programmes often have several dimensions that connect to support students to use, produce, navigate and critically engage with multiple types of technologies, texts, data, information and media. Such programmes view digital literacy as a set of interrelated competencies that enable young people to participate actively in digital societies (Knobel and Lankshear, 2018). Importantly, as mentioned, these competencies are not static but fluid and constantly changing as new developments, such as the rapid growth of misinformation and disinformation, and the emergence of cheap fakes and deep fakes, re-shape technological and media landscapes. This means digital literacy programmes need to be responsive, agile and equip students with the competences they will need for life-long digital literacy skills (Pangrazio, 2016).

Rather than reinventing the wheel, digital literacy programmes often use or adapt transnational models such as [DigComp](#), the European Digital Competence Framework and related framework for educators, [DigCompEdu](#). Such frameworks can provide reference models for: (1) the design and monitoring of initiatives; (2) the description of specific competences; (3) the level of mastery for each competence; and (4) consolidating a European approach to the reinforcement of digital competences. DigComp itself was born out of an analysis of best practices and constant consultation with experts in the field. It has been revised and updated regularly, and version 2.2 was published in March 2022.⁴³ Such frameworks usefully break down digital literacy into multiple components and provide descriptions rather than prescriptions of desired competencies (Carretero et al., 2018). The updated DigComp 2.2 framework specifically provides examples how citizens can engage confidently, critically and safely with digital technologies and online information. This is especially important in view of debates about how specific or broad definitions of digital literacy should be, and how to translate the term and operationalise it in different linguistic and teaching contexts (Pangrazio, Godhe and Ledesma, 2020).

⁴³ See Digcomp 2.2 [here](#).

Box 8: History education related to initiatives to promote digital literacy and combat disinformation

[Euroclio](#), the European History Teacher's Association, has increasingly been addressing the abuse of history by means of disinformation, connecting this to propaganda in the past. [Teaching with EUROPEANA](#) is a blog that enables teachers to share their experiences by designing learning scenarios for students. For example, the scenario [Can I trust you?](#), to be used transversally as 'civic education', focuses on media literacy, knowledge and the verification of data related to the topic of human migration.

The House of European History in Brussels has devoted attention to past propaganda and how it connects to disinformation. From 2020 – 2022 it had a temporary exhibit entitled: [Fake for Real: A History of Forgery and Falsification](#). The exhibition, which includes virtual tours of falsehoods in history, shows how the roots of disinformation have a long history. There is also a focus on the character of historical falsifications in periods of conflict and war.

Though not located in Europe, the often-visited [Newseum](#) website offers lesson plans entitled: Fake News through History: Analysing Historical Sources. They make use of the E.S.C.A.P.E. strategy. The acronym stands for Evidence, Source, Context Audience, Purpose, Execution. The approach looks at whether a source is credible or not. It entails closely analysing 'a historical source, shedding light on media shortcomings of the past and drawing comparisons to present-day challenges.'

Key and emerging components in the field

Below are some of the key and emerging components in the field of digital literacy programmes.

Increasing emphasis on students as (co-)producers: As some digital literacy programmes emphasise that students need to become empowered and active participants in both society and in their own learning (see e.g. Wunderlich & Hölig, 2022), they are often based on students (co-)creating content and taking responsibility for their own learning. This reflects a growing emphasis on pedagogies that support active, interactive and collaborative learning such as project and inquiry-based learning, and increased student choice regarding the questions they engage with and the outputs they produce to demonstrate their learning. This also frequently implies involving young people from the outset in the design process of such programmes. Such involvement can include, among other things, integrating the use of social media, video production or games, which are tools that students feel comfortable with (Grizzle et al., 2014; Moore, 2008; Wilson et al., 2013; Share et al., 2019).

Such approaches need to be well organised so that students receive sufficient support, guidance and feedback, and develop specific knowledge and skills in a way that is learner-centred rather than technology-centred (Bulger, Mayer and Metzger, 2014). This means a shift in traditional roles whereby instead of solely 'transmitting' knowledge, teachers become more concentrated on guiding students and scaffolding educational experiences to support students to discover, articulate, and apply knowledge and skills digitally.

Better ongoing support and training for teachers and educators: The rapidly changing digital and media landscape, and the challenging nature of some misinformation and disinformation (see Chapter 2.1) mean that

digital literacy programmes need more emphasis than ever on supporting teachers and educators.⁴⁴ This is addressed fully in the next chapter.

Attention to power, equity, rights and responsibilities: As mentioned earlier, digital literacy is fast becoming a prerequisite of being an active member of our democratic societies. Lack of the skills associated with digital literacy may impede the way people stay informed, participate in the digital public discourse, place trust in government and public institutions or feel connected to society at large. Providing this larger context gives digital literacy programmes more relevance and emphasises the power dynamics inherent in unequal access to digital literacy skills. Cross-country data, such as [PISA 2018](#), show clearly that less advantaged students feel more uncertain about how to safely detect disinformation (OECD, 2021a; Suarez-Alvarez, 2021). It has been pointed out that not only do digital literacy programmes need to include attention to ethics, privacy, human rights issues and security, they also need to use an explicit equity lens to prevent a further widening of the so-called ‘digital gap’ (Van Deursen et al., 2017). At the same time, the ‘democratisation’ of access to information, especially the possibility for each individual to produce and publish content, data and information with a mere click to an audience of millions places enormous responsibilities in the hands of individuals. Digital literacy programmes therefore tend to also explicitly explore the agency given to individuals in a digital society and how it can be used safely and responsibly.

Working in partnership: The complexity and ever-evolving nature of digital literacy makes it especially challenging for any person or educator to be fully competent in all its specificities. Multi-professional teams within digital literacy programmes or collaborations between educators or with organisations with different expertise can therefore often be key to a well-rounded programme offer. Moreover, teachers’ competencies can be effectively complemented when schools collaborate with external partners such as civil society organisations, which bring in expertise from fields essential to digital literacy such as, journalism, technology, the arts, or law. In 2016 a mapping of media literacy practices across the EU-28 (Insights and Chapman, 2016) showed that these partnerships are a key aspect of delivering a successful media literacy programme.

Scalable, sustainable, and evidence-based approaches, adapted to local contexts: High quality digital literacy programmes are evidence-based and include attention to scalability, sustainability and adaptability. Scalability requires resources that can be adapted to other linguistic and local contexts (Carretero et al., 2018). It also means that implementation challenges and lessons learnt are shared internationally to build a body of knowledge about best practices. There are several existing platforms and networks that seek to support these types of approaches.

New approaches to assessment: The question how to assess (and how to observe, demonstrate, recognise and measure) digital literacy in education is another crucial issue. Digital literacy programmes may necessitate a rethinking of how learning outcomes are assessed, and how these assessment procedures are themselves

⁴⁴ Mis- and dis-information usually focus on ideas with the potential to create and maintain political and social polarisation and division. Mis- and dis-information are often designed not only to attract attention and be tempting to ‘share’ but also to produce moral outrage and to discredit particular people, ideas, actions or political entities. It may also re-cast those who disagree with or question the advanced position as enemies of a particular people or cause. Thus, controversial topics are many and might include accusations of criminal activity or fraud, and transgressions of religious, moral or democratic principles (Tucker et al, 2018).

accredited or integrated into the broader school assessment system. Since digital competence is composed of knowledge, skills and attitudes, assessment needs to be multifaceted. Mastery and progress are connected to both the product and the process. It is important that students understand exactly what they are required to develop and demonstrate, and how they should get there.

The previous observations reflect developments in assessment approaches in education, for instance through [a focus on well-being](#)⁴⁵, iterative formative assessment (assessment *for* or *as* learning rather than assessment *of* learning), and more student involvement in their own assessment and the assessment of their peers (DeLuca, Coombs, and LaPointe-McEwan, 2019). Digital literacy programmes therefore use a variety of assessment approaches ranging from peer and self-assessment, which can make use of tools such as [MyDigiSkills](#) or [Europass](#), to the issuing of certifications and qualifications in higher education and for lifelong learning. The European Commission is addressing this latter issue by establishing [a European approach to micro-credentials](#) and running a feasibility study on a European Digital Skills Certificate, but it is too early to draw any conclusions from these two initiatives, beyond the recognition of the need for them.

Box 9: Example of a self-assessment instrument for students

[EduMediaTest \(2020-2021\)](#) is an EU co-funded project that allows secondary education students aged 14-18 years to test and evaluate their online media and digital literacy skills. Through an online questionnaire and an accompanied Media Kit, the tool explores student's knowledge and abilities to identify disinformation, detect hidden interests in sources, spot stereotypes, behave responsibly when it comes to copyright and explain their online behaviour. EduMediaTest is now available as an Open Educational Resource (OER) in 10 EU languages to all school communities as an initial assessment of media and digital literacy of pupils aged 14-18 years, aiming to improve their media skills, based on the results obtained and free training materials. The questionnaire evaluates media and digital literacy broken down into six dimensions: language, technology, interaction, production and analysis, ideology and values, and aesthetics (Ferrés and Piscitelli, 2012).

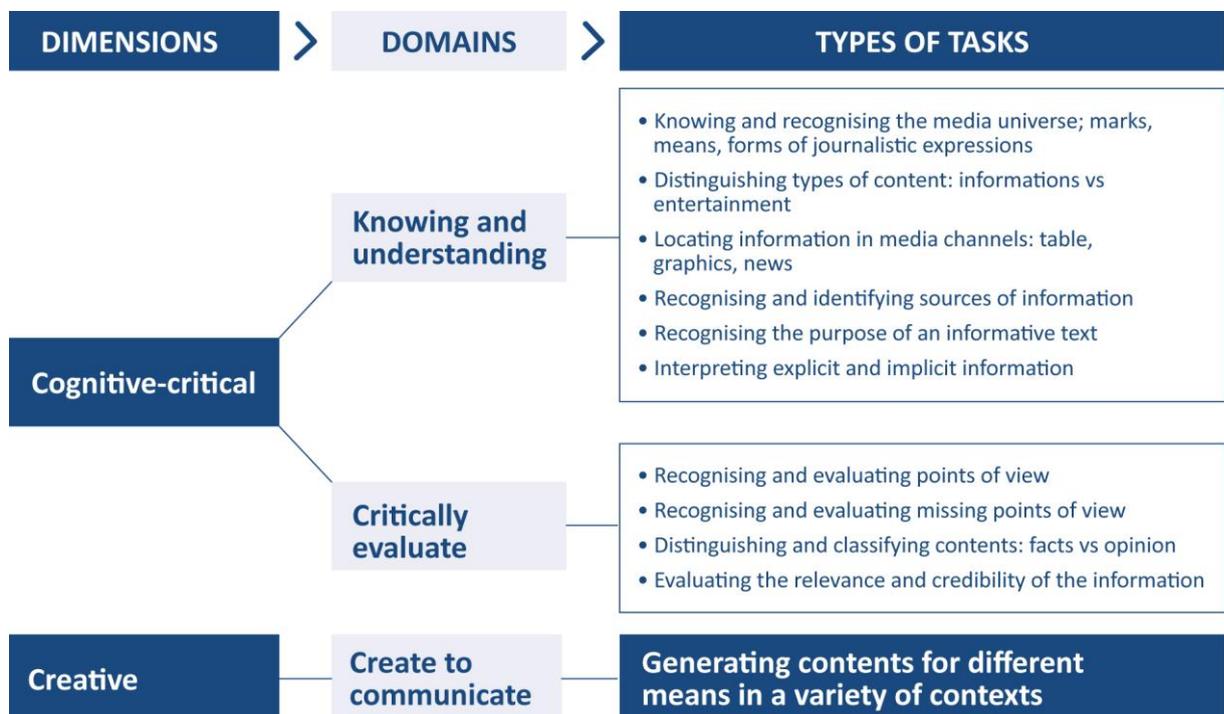
Strong monitoring and evaluation frameworks: Monitoring and evaluation systems take several different forms in digital literacy projects and programmes. There are several tools to help students and teachers assess their digital skills and competencies. [SELFIE for Teachers](#) is a tool that specifically supports primary and secondary teachers in assessing their digital skills and competences. Information from self-reported and perceived effects need to be supplemented with other, more robust measures, which for instance involve pre- and post-testing of experimental and control groups. Self-reports have limited validity not least as people tend to overestimate their digital literacy skills (Köbis et al., 2021; Mahmood, 2016; Nygren and Guath, 2019). Pre- and post-test with valid and reliable test items linked to the intended learning outcome provide more accurate assessments. For instance, mixed method approaches and design-based studies could be used to study the learning processes and outcomes from educational efforts to better understand what and how people learn to navigate disinformation (Anderson and Shattuck, 2012; Creswell and Clark, 2017). Strong monitoring and evaluation can be facilitated by ensuring that programmes are based on specific and explicit aims and

⁴⁵ See Lifelong Learning Platform - RETHINKING ASSESSMENTS: PRIORITISING LEARNERS' WELLBEING - AT A GLANCE. Available [here](#).

outcomes, targeted to clearly identified needs and that the design of monitoring and evaluation frameworks is suitable for these outcomes and allows continuous learning and improvement (Law et al., 2018). Ensuring rigorous monitoring and evaluation is one of the challenges of providing digital literacy programmes and projects, but they are important for strengthening digital literacy provisions across Europe.

Finally, it is important to use and further develop a rich set of cross-measurement instruments, since the impact of digital literacy education to address disinformation may differ across national and cultural borders and contexts (Nygren et al, 2021; Roozenbeek, Linden and Nygren, 2020). This can require cross-border collaboration among researchers and evaluators.

Figure 1: An example of how to measure media and digital literacy skills (adapted from Lopes, Costa, Araujo & Ávila 2018, p.513)



Inspiring practices related to key dimensions of digital literacy

1. In Cyprus, the experimental pilot [Antibodies to MisInformation](#) has the goal to develop ‘metacognitive attitudes and skills’ of adolescent students that allow them to critically assess digital information regarding polarising issues, such as climate change. The programme is co-created by the students themselves with guidance from journalists, educators and policy makers.

2. In the Netherlands, [social experiments on online exposure](#) were carried out where 15-year-old students were asked to use only online communication for 24 hours. The aim of the experiment was to establish whether students would be willing and able to migrate their communication to online-only environments and renounce all other types of communication. The experiments found that the students did not want to emigrate to an existence online-only.

Inspiring practices related to key dimensions of digital literacy

3. In Portugal, the [Digital Citizenship Academy 2019–2022](#) is a community-based project focused on pre-school and primary school children in the Lisbon area. Launched in 2015, the initiative is in its third phase focusing on democratic participation and media literacy. The Digital Citizenship Academy offers teacher training, regular monitoring, a school newspaper, a website and has an official [YouTube channel](#).

4. In Spain, [Empantallados](#) is a platform for parents – born out of the need to accompany children in the digital world. Advice is shared across four areas where technology has an impact on the child: personality; sociability; security; and creativity. With respect to sociability, for example, it is recognised how screens may lead to isolation, but can also be used for learning how to relate to others and for developing social skills.

5. In Sweden, [Orka Plugga – Source Criticism](#) offers video material aimed at raising young people’s awareness on how they leave digital footprints and how online information is filtered. Questions raised include: Do you verify the source when reading articles in your news feeds? What is a filter bubble and how can you break out of it? What is the difference between journalists and a news provider on social media?



2.3. Theme 3: What do teachers and educators need?

Teachers⁴⁶ play a key role in equipping their students with the skills, competences and knowledge to tackle disinformation and promote digital literacy in classrooms and schools. It is therefore important to take a deeper look into what this means in the reality of school environments. Teachers are significantly over-burdened⁴⁷ and therefore any further demands on their time and energy need to consider the contexts in which they work, their background and the skills they already have, school management expectations, the resources that are available, and the constraints and opportunities afforded by for instance the national curricula (Borko et al., 2010; Caena, 2011). We need to consider not only practical implications but also what motivates and drives teachers to acquire the competences they need, and subsequently apply them as part of their daily teaching process in today's multicultural classrooms.

Initial Teacher Education (ITE)

As in other areas, initial teacher education (ITE) related to strengthening digital competences needs to actively engage pre-service teachers, encourage and empower them to be responsible for their own learning, exploit existing learning opportunities in their real-life environments, as well as familiarising them with the importance of contextualisation (Wilson et al., 2013). Research on media and information literacy in Europe (Frau-Meigs et al., 2017) observed that there is, in most EU Member States, zero to little provision for formal teacher training in media literacy or media education. Teachers may therefore lack the necessary experience or knowledge to critically assess the pedagogical implications of a particular tool, familiarity with the ethical issues that digital platforms raise for student data privacy, or simply the time and resources to build participatory digital literacies (Foulger et al., 2019).

ITE institutions can lay solid foundations for teachers' digital and media literacy skills, even though equipping teachers with the necessary competences is a lifelong exercise in a constantly evolving environment (Wilson et al., 2013). The development of teachers' competences is a continuum that begins with ITE and continues throughout their professional career as continuing professional development. Presently, [the European Digital Competence Framework](#) (DigComp) and the [European Framework for the Digital Competence of Educators](#) (DigCompEdu) can serve this purpose.

The development of digital and media literacy is most effective if all teachers, rather than only specialised teachers, receive training and this starts at the pre-service level. This also allows for discussion and collaboration among pre-service teachers, irrespective of their subject area preferences. The ability to search for relevant and reliable information, assess its validity, and detect biased information is vital for all subjects.

⁴⁶ It is also important to note that in schools, other professionals such as school psychologists, school social workers and librarians can play an important role, especially in whole school approaches to promoting digital literacy.

⁴⁷ See for instance Deutsche Welle (2017), *Study: school stress harming teachers* [here](#).

Continuing Professional Development (CPD)

In-service teachers' professional development in digital literacy differs from that of initial teacher education in several ways, such as duration, competing responsibilities, mechanisms to support teacher learning, teaching experience and expertise. Traditionally, in many countries, more resources are allocated to initial teacher education than in-service teacher training (OECD, 2020); also, there is insufficient teacher education in media and information literacy (Sigh et al., 2015). This indicates a gap between theory, which sees the teaching profession as dynamic, changing and in need of continuous professional development (CPD), and traditional practices that view teacher learning as fixed and accumulated primarily during pre-service and early teacher training. Increasingly, researchers call for teachers to be seen as professionals and intellectual partners in designing and enacting opportunities for learning (Kyza et al., 2022) and to be supported in becoming flexible and adaptive experts throughout their teaching careers (Superfine et al., 2022).

Research indicates that successful in-service professional development programmes tend to be aligned with the goals of the school, take place in the teacher's own work environment, are extended in time, embedded in practice and provide opportunities for continuous professional development (Borko et al., 2010; Desimone, 2009). According to Darling-Hammond et al. (2017), effective professional development should: (a) be linked to disciplinary-specific teaching strategies (content focused); (b) adopt active learning strategies (such as co-design and participatory design); support collaboration and the development of learning communities; (c) model best practices; (d) provide mentoring, coaching and the development of teachers' expertise, and (e) should allow for feedback and reflection over extended periods of time. Research points to the importance of connecting professional development to practice, supporting teachers as reflective practitioners (Schön, 1983) and examining effectiveness in relation to teacher and student learning (Clarke & Hollingsworth, 2002; Fishman et al., 2003). Teacher learning should also be seen as a complex and dynamic system, and care should be given to the micro, meso and macro levels of how schools operate, to the school environment and the school infrastructure (Opfer & Pedder, 2011).

Box 10: How are teachers taught digital literacy most effectively?

Research relating to how to educate teachers most effectively around issues of digital literacy and media literacy is still being gathered and there is still limited evidence to indicate what the most effective programmes are (see McDougall et al., 2018). Countering the vast amount of disinformation that students (and teachers) encounter online is highly challenging and requires an interdisciplinary approach. Initial evidence shows that leaving teachers to their own devices after receiving training is not very effective. Instead, establishing teacher design teams who work in collaboration with experts from other fields (i.e. social scientists, computer scientists, journalists, researchers, etc.), local partnerships, and research-practice partnerships to develop, implement and assess learning materials to foster digital and media literacy skills against disinformation can provide a rich context for teacher learning (Voogt et al., 2011). Such an approach also helps create locally sensitive and adaptive approaches to counter disinformation and misinformation (Tomé et al. forthcoming). Attention also needs to be given to the training of teacher educators and the partnerships and resources that are needed by mentor teachers during their continuous professional development (CPD) practices and sustain teachers' engagement with CPD (taking into account aspects such as accreditation).

Creating effective learning environments for digital literacy

To identify the kinds of resources that teachers and educators need to teach about countering disinformation and promoting digital literacy, it is important to consider how best to create the most conducive environment for such teaching in the classroom.

Lack of time, lack of confidence and experience, an overburdened schedule, standard curriculum requirements and increased polarisation within our societies pose a challenge to teachers planning lesson time to the topic of disinformation and digital literacy. The inherently divisive nature of disinformation has the potential to trigger strong emotional student reactions in the classroom (Keegan, 2021). Often these reactions stem from students' social identities that have formed due to their basic human need for social belonging (Baumeister & Leary, 1995; Alexander, 2008). Social identities influence how individuals interpret the world and give it meaning. We are in essence social animals, relying greatly on people we trust to form knowledgeable, nuanced views about complex matters (Sloman & Fernbach, 2017). Our social environment also impacts our goals, emotions and behaviours (Van Bavel & Packer, 2021).

The digital universe allows social identities to be increasingly communicated and amplified in moral and uncompromising terms (Van Bavel & Packer, 2021). Teachers often lack the training to effectively deal with and manage such emotions among their students. This can easily lead to dissatisfaction, stress and burn out.⁴⁸

In a digital world, teachers are increasingly required to move out of a more traditional role of transferring knowledge about subject content to their students. Pedagogical approaches relying mainly on a uni-directional transfer of knowledge have been found to be insufficient to address controversial topics in the classroom (Keegan, 2021).

Box 11: An example of a pre-service education initiative in the EU

[CoMMiTTEd](#) – Covid, Migrants and Minorities in Teacher Education: A Fake News Observatory to promote Critical Thinking and Digital Literacy in Times of Crisis (2021-2023)

This Erasmus+ Project involves the Universidad de Navarra, the Universidade da Aveiro and the Stichting Katholieke Universiteit Brabant. The project addresses digital issues by planning, developing, testing and evaluating resources for digital teaching education. It aims at enhancing student teacher's critical thinking and builds digital teaching competences.

The outcomes of the project are: (1) an on-line databank called Pedagogical Observatory of fake News; (2) two on-line teacher education modules; one developing interpreting and relating skills and the other critical cultural awareness; and (3) a pedagogical e-handbook for teachers and teacher trainers.

In classrooms where teachers plan to tackle disinformation, creating a more tolerant, safe and trusting learning

⁴⁸ There are indications that the COVID-19 pandemic exacerbated teacher burnout and stress (Steiner & Woo, 2021). Some of this was caused by disinformation related to COVID-19 and vaccinations, and both parent and student attitudes relating to these issues (Hidalgo-Andrade & Hermosa-Bosano, 2021).

space for students is critical. Top-down teaching methods such as lecturing, can create distance and disengagement. Promoting a positive common group identity among students and between students and teachers, based on trust, creates the kind of positive learning environment needed to tackle controversial issues.⁴⁹

Engagement of young people

In today's world, children can start interacting with digital devices when they are still in the crib (Chaudron et al., 2018), evolving gradually to making new connections on social media, creating and sharing their own content and becoming 'information-seekers' (Stalker et al., 2019). Due to this they are more acquainted with digital devices than previous generations. Adolescents generally use the internet more than the adult population for finding information, whether for informal or formal learning (Eurostat, 2020). However, it is one thing to search and find information, but another to identify reliable information online and to analyse the information encountered online. Many young people are poorly equipped to verify the truth of online information⁵⁰ and some see the role of education and training key in supporting them with the development of these skills (Eurobarometer, 2019). This points to a need for more support, whether from parents, older peers, schools or digital providers (Stalker et al., 2019). At the school level, teachers are increasingly confronted by children bringing the online world into their schools and classrooms, while most teachers lack sufficient insight in how their students use social media.⁵¹

Children's use of digital technology has changed in recent years. During the COVID-19 lockdown, children increased their consumption of digital content and changed how they used digital devices (extending it from entertainment to a much more academic use). This represented a shift for children in how they perceived the digital world (Cachia et al., 2021). Given the increase in academic use, information verification has become an even more pressing issue. A systematic literature review, focused specifically on news, concluded that college students tend to lack the ability to distinguish between true and fake news, and that lack of critical thinking could be linked to people's inability to identify disinformation (Machete & Turpin, 2020).⁵² It is therefore an important task for society to ensure that teachers have the competences to effectively engage with young people when teaching how to tackle disinformation and develop media literacy. Teachers need access to resources and master strategies to engage students in critical analysis (e.g. critical observation, reverse image search, geolocation) and reflexive production, as well as dissemination of media content to help them develop key digital literacy competences. Such competence building is most effective if it starts from the students' interests and is developed on devices they use regularly. Activities should, as much as possible, be student-led and teacher facilitated. They can also be aimed to stimulate positive social change, for instance through service-based learning (Clark, 2013).⁵³

⁴⁹ See also: Hansen-Staszyński & O. Staszyńska-Hansen, B. 2022.

⁵⁰ See the research story from Stanford university [here](#).

⁵¹ See Euroclio (2022), THE THIN LINE between propaganda and fake news: a blog post, which can be accessed [here](#) and Schouwstra, M. (2016), which can be accessed [here](#).

⁵² A [study](#) by Wineberg and McGrew (2019) showed that 'historians and students often fell victim to easily manipulated features of websites, such as official-looking logos and domain names.'

⁵³ Service-based learning is an educational approach that combines classroom work with real-life experience in serving the community. This 'experiential learning' process helps children personally discover how the educational, emotional and psychological benefits of their individual and collective efforts can boost their own sense of self-worth and self-esteem. See <https://www.wecanwecanwecan.com/partners>.

Involvement of parents/carers and families

While a great deal of effort has been devoted in recent years to ensure that schools are optimal environments to promote the acquisition of digital literacy skills, the intensive use of digital technologies is increasingly also part of family routines (Holloway et al., 2013). Students usually access the digital world from home with or without the support of parents/carers. They interact with peers, do homework, complete class assignments, but also encounter the multiple threats that characterise the online and social media world, such as disinformation or cyberbullying. This reality highlights the importance and potential benefits associated with teachers connecting with parents and families when initiating activities to enhance students' digital literacy skills. Recent research has shown the importance of parents' example for children in using digital devices and the importance of practices families have at home (Stephen et al., 2013; Marsh et al., 2015). Parents are usually the main providers of digital technology for their children, and at the same time offer them a first and important example of how to use it, something their children tend to mirror (Terras et al., 2016). Though working with parents can be beneficial for all, it should be noted that in some cases extra caution is needed; for instance, where parents are firm believers of conspiracy theories. When this is the case, school becomes the most appropriate place for students to be taught the skills needed to evaluate conspiracy claims and disinformation in a more critical way.⁵⁴

Formal and informal learning are both important to assure any competence acquisition, and this is no different with respect to digital and media literacy (Terras & Ramsay, 2016). It can be beneficial for schools to offer families and parents (and/or carers) the possibility to increase their own digital and media literacy skills (Barnes & Potter, 2020), while also receiving advice on how to help and guide their children to better understand the role of digital technology in their lives. It can be useful for head teachers and teachers to take the initiative to create communication channels with families for this purpose. To some extent, such efforts can build on the communication channels created by schools during the school closures during the COVID-19 pandemic. Several initiatives and resources worth highlighting that can be useful in engaging parents, include [Digital Parenting from LSE](#), [MeLi for Parents](#), [Empantallados](#) (ES) and [Medianest](#) (NL). Furthermore, the [Better Internet for Kids](#) website under the European Strategy for a Better Internet for Children includes a wide range of resources for parents and carers as well as teachers in all EU languages, such as a guide to the most popular apps and guidance on topical issues (for instance, on cyberbullying and on inappropriate content).

Inspiring practices related to teachers

- 1. In Bulgaria**, the handbook [Competence approach in practice: holistic model for building key competencies in school](#) provides a comprehensive model for development of the European reference frameworks for digital competences. Available for primary and secondary school teachers, the handbook offers training modules on topics such as how to best involve parents and how to build a community.
- 2. In France**, [Eduscol](#) launched by the Ministry of Education gathers academic resources that inspire teachers to foster critical thinking and tackle conspiracy theories. Teachers are encouraged to convey the importance of questioning one's own use of media, and reflecting and questioning dubious information before sharing it – especially on social media.

⁵⁴ See Scientific American (2022), Schoolkids Are Falling Victim to Disinformation and Conspiracy Fantasies, available [here](#).

Inspiring practices related to teachers

3. In Lithuania, the NGO [Creative Connections](#) offers a programme designed to reveal and develop the creativity and critical thinking of both teachers and students. With a focus on reaching minority groups (Russian and Polish), the programme creates a space for collaboration between students, teachers and practitioners in the development of new and research-driven teaching methods.

4. In Sweden, the [News Evaluator](#) is a testing tool that teaches an evidence-based method for online source criticism. Available in Swedish and English, it can be used by educators teaching source criticism, or by anyone wanting to learn how to evaluate the credibility of online news themselves.



2.4. Theme 4: Key approaches and initiatives across Member States

Across Europe, there are significant differences in the way education is organised. In some countries, schools have more autonomy in the kinds of training opportunities they offer teachers, in their ability to choose resource materials, the way they implement instructions from the government, how progress is assessed and in the teaching practices that are, and can be, used. It has been noted that with respect to digital literacy, as is the case in general, whole-school approaches and safe learning environments are needed to effectively develop competences across various subject areas (McCowan, 2010; Liu et al., 2021). In such environments, students also need to have the freedom to express themselves and to disagree with each other and the teacher.

Multiple efforts have taken place at the international level to promote student-centred learning approaches and to promote collaboration between schools and teachers. For instance, efforts have been taken to promote cooperation between schools to enrich school environments. The [EU eTwinning initiative](#), which connects teachers from different countries, offers excellent opportunities for collaboration to develop joint projects that address disinformation and promote media literacy.⁵⁵ Recent years have seen multiple European journalist-led initiatives, such as Erasmus+ funded ‘[Journalism as a learning tool](#)’ (for more examples see Box 13). Schools across Europe have also frequently collaborated with civil society organisations when developing media literacy programmes. Such initiatives include [Faktabaari](#), [AfricaCheck](#), [Hive Mind](#), and [Lie Detectors](#). Other projects like [Social Media Literacy for Change](#), coordinated by [European Schoolnet](#), take a whole school approach. Whole school approaches involve multiple actors in the school community such as students, teachers, school directors, librarians, school psychologists and school social workers. Furthermore, UNESCO’s [Media and Information Literacy for Teachers](#) website provides access to international, multimedia and multi-language media and information literacy (MIL) teaching resources for educators.

The [Media Literacy Index 2021](#) concludes that ‘better functional education and specialised media literacy education would offer resistance against the worst cases of fake news and post-truth’ (Lessinski, 2021). Finland (1st), Denmark (2nd), Estonia (3rd), Sweden (4th) and Ireland (5th) top the rankings of the Media Literacy Index 2021 and have, according to the report, the ‘highest potential to withstand the negative impact of fake news and misinformation due to the quality of education, free media and high trust among people.’ Several of these EU countries, as well as for instance France have initiated a process to include digital and media literacy in their curricula – some from as early as primary-school age – with the goal of ensuring equal and gender sensitive access to digital and media literacy. In France, the Ministry of Education has provided guidelines as to where media and information literacy fits in the curriculum, at both the primary and secondary levels, in all disciplines, from math to languages.⁵⁶

In February 2022, the Ministry of Education issued a ‘circulaire’ (circular) ‘for the generalisation of Media

⁵⁵ See for instance: [Teaching Media Literacy and fighting Disinformation with eTwinning](#).

⁵⁶ Read more at the French Ministry of National Education, Eduscol, which can be accessed [here](#).

and Information Literacy’ across all education cycles.⁵⁷

Box 12: Country examples of teaching digital literacy

In **Belgium** (Flanders), initiatives to promote digital literacy (mediawijshheid) can receive a [special award](#) from the organisation Mediawijs (Media Wise). The annual initiative started in 2017 and the award is intended to give digital literacy initiatives recognition and visibility. Projects are judged on the following criteria: (1) content; (2) societal impact; (3) sustainability; (4) innovation; and (5) attention to digital inclusion. Multiple educational institutions have won an award.

In **Finland**, the Ministry of Education and Culture launched the [New Literacies Programme for 2020-2023](#). The programme includes descriptions of targeted competence in ICT, media literacy and programming skills. The descriptions of competence are based on the national core curricula for early childhood education and care and those for pre-primary, primary and lower secondary education.

In **France**, teaching of digital literacy is the responsibility of two actors within the Ministry of Education: [CANOPE](#) and [CLEMI](#), the Center for Media and Information Literacy created in 1983 and its contact points in the rectorates; EDUSCOL, the ministry’s website for teachers (Eduscol, 2021). Additionally, since 2007, school librarians have been trained in digital literacy, to obtain their professional degree. Since 2018, France has also involved the Ministry of Culture, the DGMIC (Directorate for media and cultural industries) and BPI (Bibliothèque Publique d’Information) to reach out to librarians, journalists and CSOs in the digital literacy field.

In **Sweden**, critical thinking and source criticism are taught from an early age – already at preschool level – up to upper secondary school. In the [national curriculum](#), it is stressed that pupils should develop digital skills while fostering a responsible attitude towards using digital technology. The educational programme thus provides pupils with conditions to develop their digital competence in ways that promote citizenship and entrepreneurship. Beyond students, the curriculum sets the objective that ‘all who work in schools’ should be aware of both the possibilities and risks of digitalisation (Skolverket, 2018).

Teaching digital literacy across Europe

Democratic values, critical thinking and media literacy can be subject-based or based on transversal competences, or a mix of both. New curricula in the EU (for example, in Austria and in the Flemish Community of Belgium) frequently use key competences as a basis for analysis (European Commission/EACEA/Eurydice, 2019). One of the EU key competences is citizenship, which together with the digital competences are a firm basis for what should be aimed for in teaching digital and media literacy. A more detailed framework is provided by the Council of Europe (CoE) with its [Reference Framework of Competences for Democratic Culture](#) (see Chapter 4 for more information). The CoE stimulates its member states to integrate this framework in their education. Descriptors are provided to help educators design learning situations that enable them to observe learners’ behaviour in relation to a given competence. In most countries this is embedded within digital and media literacy education practices which are often implemented through project work or cross curricular activities.

Experience from the COVID pandemic suggests that – in the absence of it being considered a core literacy –

⁵⁷ More information can be at the French Ministry of National Education, ‘Enseignements primaire et secondaire’, which can be accessed [here](#).

consigning digital literacy into a separate subject created a risk of the digital literacy being side-lined, particularly during times of crisis. For example, in order to prioritise ‘core’ subjects during pandemic shut-down, Belgium's French-speaking state schools, had fewer citizenship lessons which generally include digital literacy training.⁵⁸ Notable examples of teaching digital and media literacy as a distinct subject, as well as a cross-curricular or transversal competence, exist in the Nordic countries (Godhe, 2019).

Various national initiatives also took place in advance of the earlier mentioned DigComp framework. The Spanish Ministry of Education, Culture and Sports adapted the framework for Spanish teachers, and it has been used as a strategic support document for further development of teacher professional development. In the Netherlands, a self-assessment [tool](#) was developed for teachers, so that they could assess their own digital literacy.

Finally, relying on digital tools to identify manipulated images and videos has been shown to be a useful instrument in classrooms in several countries in Europe (Nygren et al., 2021). Students in France, Romania, Spain and Sweden who learned to use the video verification tool [InvidWeVerify](#) became better at identifying fake photos and videos after two hours of instruction (Nygren et al., 2021). Especially those teenagers who, after the self-test or instruction, used digital tools, such as text searches or reverse image search, managed to debunk misleading news.

Boxes 12 and 13 offer examples of initiatives engaging journalists across Member States.

Box 13: Lie Detectors

[Lie Detectors](#) is an independent media literacy organisation working with 200+ professional journalists and schools in multiple EU countries and languages to enable children aged 10-15 and their teachers sort fact from fake online and understand how journalism works. Some key elements of their work include:

- Approach, materials and scripts developed in multiple languages and designed to integrate local digital trends and translate easily from one language and media landscape to another, and yield consistent, measurable and comparable results.
- Age-appropriate materials designed to address different themes, including COVID, the environment, general news and content for younger children;
- Journalist selection and training to ensure child-centred approach and consistency;
- Teacher training across all disciplines via seminars and mentorship;
- Script and quality control elaborated with teachers, children, researchers and psychologists;
- Cooperation with academia to measure progress and;
- Balance of rural/urban/vocational schools.

⁵⁸ See the policy document issued by issued by Fédération Wallonie Bruxelles, Belgium (2020) [here](#) (p. 3).

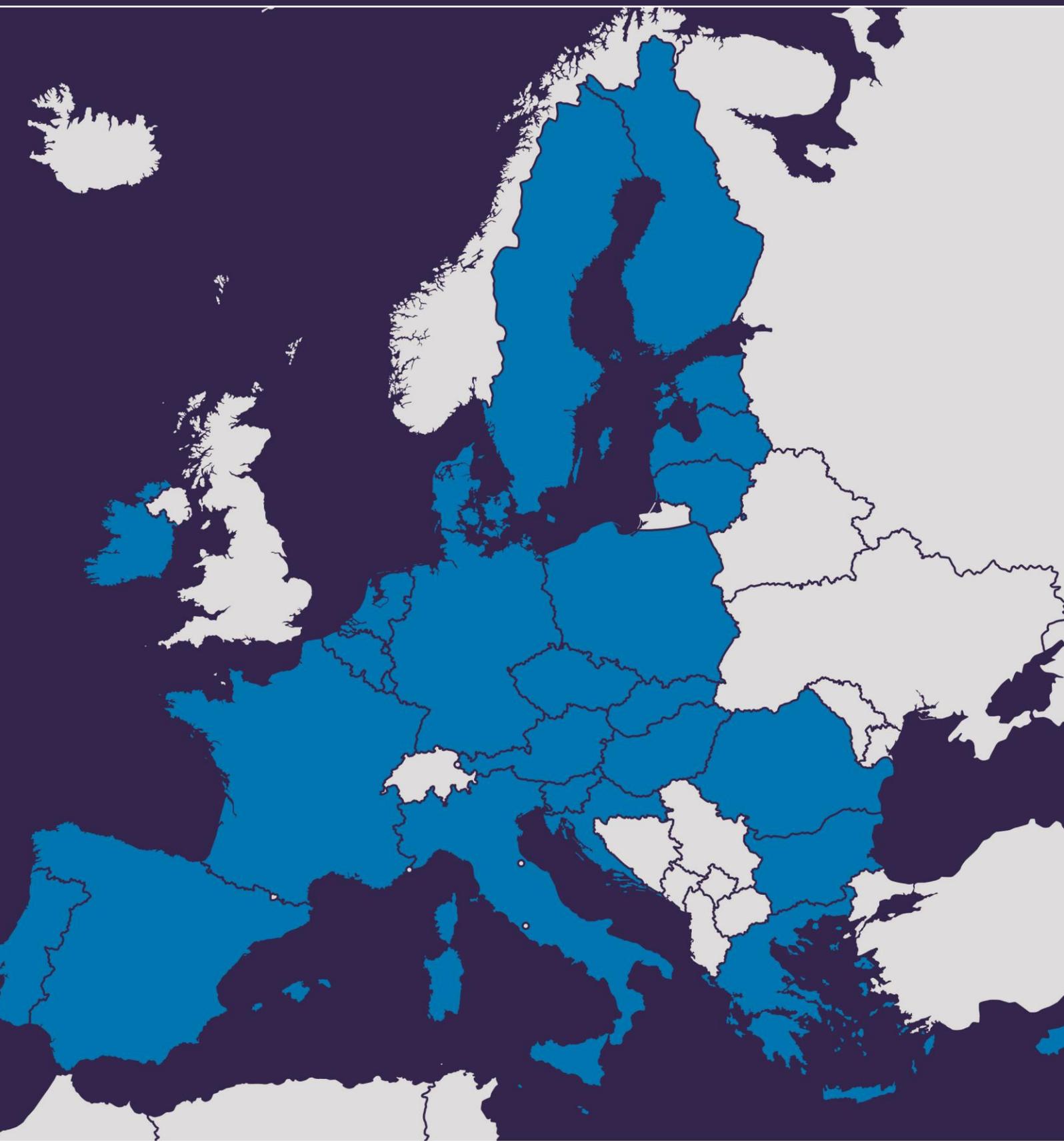
Box 14: Additional examples of journalist-led initiatives in Europe

In Germany, [‘Journalismus macht Schule’](#) provides an umbrella for approximately a dozen independent news-literacy initiatives headed by journalists and media practitioners. The aim of the alliance is to help schoolchildren become competent actors in the democratic public sphere in a coordinated and sustained effort by volunteer journalists and teachers.

In Portugal, the project [‘Literacia para os Media e Jornalismo’](#) is an initiative created by journalists and academics. The goal is to assist teachers in developing activities related to media literacy with the broader aim of contributing to the development of students' critical thinking competences. The focus is on reading skills and information analysis, in a critical and autonomous way.

In Wallonia Belgium, [‘Journalistes en Classe’](#) recently adopted a media-literacy module to its long-running news-literacy offering for schools.

In Austria, [‘Digitaler Kompass’](#) offers online fact-checking games and activities for schools, created by journalists, and connects journalists with students aged 16-18.



3. Developments in the EU regarding digital literacy and disinformation related to education and training

This chapter offers an overview of the main EU political guidelines and policy initiatives related to promoting digital literacy and tackling disinformation in education and training.

In recent years, a series of EU policy documents have highlighted the importance of developing higher levels of media and digital literacy among students, and the need to address the issue of disinformation at the school level. Key documents issued during recent years include (see Appendix 3 for more):

- In March 2015, the [Paris Declaration](#) of EU Education Ministers called for action to '[strengthen] children's and young people's ability to think critically and exercise judgement so that, particularly in the context of the internet and social media, they are able to grasp realities, distinguish fact from opinion, recognise propaganda and to resist all forms of indoctrination and hate speech.' The Declaration also expressed the need to '[empower] teachers so that they are able to take an active stand against all forms of discrimination and racism, to educate children and young people in digital literacy.'
- European Council Conclusions of May 2016 on [Developing media literacy and critical thinking through education and training](#) noted that education and training should provide learners with the competences and values required 'to access, interpret, produce and use information and other media content, notably in the context of the internet and social media, in a safe and responsible manner.' The Council directly invited Member States to pay sufficient attention to 'developing digital literacy and critical thinking in education and training at all levels, including through citizenship and media education.'
- In January 2018, the European Commission set up a [High-Level Expert Group \(HLEG\) on Fake News and Online Disinformation](#) to advise on policy initiatives to counter fake news and disinformation spread online. The HLEG consisted of 39 members from academia, journalism, media, online platforms as well as civil society and fact-checking organisations. The HLEG's tasks were to advise the Commission on all issues arising in the context of false information spread across traditional and social media and on possible ways to cope with its social and political consequences. The HLEG's resulting report on [A multi-dimensional approach to disinformation](#) invites Member States to prioritise research, media literacy, empowerment of users and journalists, diversity of the news media ecosystem and evaluation of platforms.
- [The European Council Recommendation of May 2018 on Common values, Inclusive Education, and the European Dimension of Teaching](#) invites Member States to strengthen social cohesion to fight the rise of populism, xenophobia, radicalisation, divisive nationalism and the spreading of fake news, notably by continuing to implement the commitments of the Paris Declaration on enhancement of critical thinking and digital literacy.

- In May 2018, the [Council Recommendation on Key Competences for Lifelong Learning](#) were adopted, which emphasised digital media literacy and critical thinking. The document notes the need to ‘strengthen the capacity of people – particularly children and young people - to think critically and exercise judgement so that, especially in the context of the internet and social media, they are able to grasp realities, to distinguish fact from opinion, to recognise propaganda and to resist all forms of indoctrination and hate speech’ (p. 43).
- The [EU Code of Practice on Disinformation of October 2018](#) was the first time (globally) that online platforms, leading social networks, advertisers and advertising industry agreed on a voluntary basis to self-regulatory standards to combat online disinformation. The Code of Practice was signed by key actors across the EU.
- The revised [Audiovisual Media Services Directive](#) (AVMSD) issued in November 2018, emphasises the role of media literacy. It requires Member States to promote measures that develop media literacy skills (Article 33a) and obliges video-sharing platforms to provide effective media literacy measures and tools. This is a crucial requirement due to the central role such platforms play in giving access to audio-visual content. Online platforms are also required to raise users’ awareness of these measures and tools (Article 28b). Finally, under the revised AVMSD, Member States report to the Commission every three years, starting 19 December 2022, regarding measures taken to develop media literacy skills.
- In December 2018, a Joint Communication to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions: [Action Plan against Disinformation](#) was published. The document notes that it is critical that individuals become more resilient against disinformation, requiring continuous and sustained efforts to support education and digital literacy, journalism, fact-checkers, researchers and civil society as a whole.
- European Council conclusions from November 2019 on [Digital Youth Work](#) state that ‘digital literacy and other 21st century skills play a crucial role in young people’s independence, social inclusion, employability and daily lives.’ The conclusions further highlight youth work as a solution as it ‘empowers young people to be active and creative in digital society and [...] help young people to face online risks related to conduct, content, contact and commercialism, including hate speech, cyberbullying, disinformation and propaganda.’
- European Council Conclusions from May 2020 on [Media literacy in an ever-changing world](#) note that the new media ecosystem has led to an increase in disinformation, manipulation and hate speech. Against this background, the conclusions highlight the need for strengthening media literacy and call for ‘a systematic, strategic and comprehensive approach by all Member States, as well as intersectoral collaboration between the various stakeholders.’
- Looking ahead, in September 2020, the Commission’s updated [Digital Education Action Plan \(2021-2027\)](#) emphasises that ‘digital literacy is essential for life in a digitalised world and that [...] it is important to educate people at all ages about the impact of digital technology on well-being and the way technology systems work.’ Regarding disinformation, the Action Plan further notes that ‘education should more actively help learners develop the ability to critically approach, filter and assess information, notably to identify disinformation and to manage overload of

information as well as develop financial literacy.’

- [The European Democracy Action Plan](#), published in December 2020, aims to make European societies more resilient and better prepared for the challenges of the future, and European democracies more resistant to the spread of disinformation. The European Democracy Action Plan sets out key actions on disinformation, covered in three areas: improving EU and Member State capacity to counter disinformation; introducing more obligations and accountability for online platforms; and empowering citizens to make informed decisions.
- In March 2021, the European Commission presented its vision for [Europe’s Digital Decade](#). A core element is digital citizenship linked to proposal for [Declaration on European digital rights and principles](#). As listed below, they will complement existing rights, including those in the Charter of Fundamental Rights of the EU, and data protection and privacy legislation. The rights and principles will also offer a reference framework for citizens on their digital rights, as well as guidance for EU Member States and for the private sector when dealing with digital technologies.
 - Putting people and their rights at the centre of the digital transformation.
 - Ensuring freedom of choice.
 - Increasing safety, security and empowerment of individuals.
 - Supporting solidarity and inclusion.
 - Fostering participation in the digital public space.
 - Promoting the sustainability of the digital future.
- Following the Commission’s Guidance on [Strengthening the Code of Practice on Disinformation](#), published on 26 May 2021, initial and new signatories were revised. The strengthened Code is being drafted by the signatories with the aim of ensuring an even more trustworthy, transparent and safe online environment for users. The strengthened Code of Practice will represent a self-regulatory instrument for addressing disinformation on online platforms in the EU and will move towards a co-regulatory instrument as outlined in the proposed [Digital Services Act](#). It also gives media literacy a more important role.
- In October 2021, the Commission announced the launch of a structured dialogue with Member States on digital education and skills. The dialogue is a process of closer exchange with the Member States, stakeholders, and experts on digital education and skills. Among its pillars, the dialogue focuses on digital competences and the contents of digital competence frameworks. It informs two Council Recommendations to be proposed by the Commission in late 2022: (1) enabling factors for successful digital education and (2) improving the provision of digital skills in education and training.
- In May 2022 the new [European strategy for a better internet for kids](#) (BIK+) was adopted, which is an update of the previous BIK strategy from 2012. The new strategy proposes measures to protect, empower and respect children online through age-appropriate experiences, supporting digital skills and boosting children’s participation in the Digital Decade and beyond. It also addresses the digital divide, noting that children in vulnerable situations (e.g. with disabilities, migrant children) need support to acquire the necessary skills to stay safe online.



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4. Previous work by international organisations

This chapter offers an overview of related work carried out by international organisations, including UNESCO, the Council of Europe (COE), the Organisation for Economic Co-operation and Development (OECD), and the International Telecommunication Union (ITU).

UNESCO

In April 2021, UNESCO launched the report [Media and information literate citizens: think critically, click wisely!](#), which draws attention to how Media and Information Literacy can contribute to people's critical thinking and advance the United Nations' Sustainable Development Goals (SDGs). The report also highlights digital and social issues of increasing importance including artificial intelligence, privacy issues, social competencies such as digital citizenship, education for sustainable development, science literacy, cultural literacy and intercultural competencies, as well as the rise in disinformation and online hate speech.

UNESCO also organises the [Global Media and Information Literacy Week](#) (MIL), initiated in 2012, in cooperation with the UNESCO MIL Alliance, the UNESCO-UNAOC MIL and Intercultural Dialogue (MILID) University Network, and other partners. It is an occasion for stakeholders to review and measure the progress achieved towards 'Media and Information Literacy for All.' In 2021, best practices were shared from across the world and one of the key messages was that in the promotion of media and information literacy, the youth are not only beneficiaries but also drivers of change.⁵⁹

UNESCO has noted that the internet holds the greatest potential as a tool to contribute to increased awareness and knowledge among youth, but that it is increasingly used for malicious purposes such as radicalisation and youth extremism.⁶⁰

The Council of Europe

The Council of Europe (CoE) has mapped digital literacy practices and actions across its 47 member states and noted that multiple projects include a focus on challenging radicalisation and hate speech online. The CoE has placed such projects in the category of Intercultural Dialogue.⁶¹

[The Digital Citizenship Handbook](#) from 2019 is designed to help educators and other interested adults. It identifies three aspects of online life – being on-line, well-being online and rights online, and builds on the Council of Europe's Reference Framework of Competences for Democratic Culture and the achievements of its longstanding Education for Democratic Citizenship programme. The Handbook includes various fact

⁵⁹ UNESCO (2021) International community gives a strong push to media and information literacy, available [here](#).

⁶⁰ UNESCO (2016) Media and information literacy: reinforcing human rights, countering radicalization and extremism, available [here](#).

⁶¹ See Council of Europe (2016) Mapping of media literacy practices and actions in EU-28, available [here](#).

sheets, ideas, good practice examples and further references. It also complements the Internet literacy handbook as part of a coherent approach to educating citizens for the society of the future.

The [Digital resistance Handbook 2021](#) (see also Chapter 5), developed in cooperation with the European Union and Council of Europe Joint Programme Democratic and Inclusive School Culture in Operation (DISCO), provides key information for teachers and their students on how to recognise fake news and false information online. Beyond discussing disinformation and digital competences, the handbook explains the relevance of specific digital outputs such as animation, digital storytelling, blogs, wikis, podcast and Instagram stories.

The [Reference Framework of Competences for Democratic Culture](#) (2018) has been developed for compulsory education, higher education and vocational training institutions throughout Europe, as well as for national curricula and teaching programmes. The framework offers 20 competences divided into the four areas of values, attitudes, skills and knowledge, and critical understanding. It is accompanied by information about the background of the model, how it was developed and how it is to be used. The framework also contains learning targets and outcomes for each competence to help educators design learning situations that contribute to a given competence.

The [Digital Citizenship Education Survey 2020](#) by the CoE aimed at discovering how parents and their children become responsible digital citizens, received 21 000 responses. Among other findings, it was found that learning digital technology is a two-way street, as children learn from parents and vice versa. Other findings suggested that the school and the community are needed to bridge the gap when families are not able to support their children's online activities.⁶²

OECD

The OECD has emphasised that students need to learn to identify what 'fake news' is and included an assessment of students' ability to 'spot fake news' in PISA 2018.⁶³ The results of this study show that, on average, only around 8.7 % of students across the OECD countries were skilled at distinguishing fact from opinion.⁶⁴

There is extensive work in the OECD on issues related to combatting mis- and disinformation and developing digital literacy. The OECD's Programme for International Student Assessment (PISA) 2018 assessed reading, including essential reading skills in a digital world. The [21st Century Readers](#) report provides data on how students' access to digital technologies and training on how to use them vary within countries, and how 15-year-old students are developing reading strategies to navigate information flows in a digital world. The OECD's Centre for Educational Research and Innovation (CERI)'s fostering and assessing [creativity and critical thinking project](#) is an in-depth study of how critical thinking can be supported across the curriculum in both primary and secondary education. The project works with educators to develop approaches and resources

⁶² See Council of Europe (2020), DIGITAL CITIZENSHIP EDUCATION SURVEY 2020, which can be accessed [here](#) (for more provisional findings).

⁶³ See [BBC news article](#) (2017).

⁶⁴ See OECD (2018). PISA 2018 Results COMBINED EXECUTIVE SUMMARIES VOLUME I, II & III, which can be accessed [here](#).

adapted to local contexts and disciplines, and documents them to serve as inspiration for other educators to develop similar approaches to improving critical thinking in their own teaching and context. CERI's [21st Century Children project](#) has examined policies and practices in different OECD countries to promote digital literacy, looking at which kinds of skills are being taught and at which levels of education (i.e. early childhood, primary, secondary), and how these are incorporated into the teaching and learning process (i.e. through the curriculum, learning frameworks, school-based interventions, extracurricular opportunities, online resources, etc.). Current work is looking more in depth at the importance of digital literacy in the face of mis/disinformation, and how children can be active and empowered agents of change in the digital environment. This work in the OECD's Directorate of Education and Skills complements the organisation's broader work on [reinforcing democracy](#) and supporting governments to understand disinformation campaigns and design regulatory measures to combat mis- and disinformation.

The International Telecommunication Union (ITU)

Responding to risks that rapid ICT-developments pose to young people, the International Telecommunication Union (ITU) has launched the [Global Programme on Child Online Protection](#). This project strengthens global efforts to implement the [ITU Child Online Protection \(COP\) Guidelines](#) (see Chapter 5) launched in summer 2020, to foster effective policies, ensure upgrading of skills and promote an enhanced global dialogue.



GUIDELINES



5. Existing guidelines to counter disinformation and promote digital literacy in the EU and beyond

This chapter offers an overview of already existing guidelines that focus on addressing disinformation and promoting digital literacy. They can be used to supplement the present document.

Addressing disinformation and promoting digital literacy have emerged as priorities in the field of education and training worldwide. In response, various initiatives, practices, tools and training courses have been developed with the view of supporting young learners to strengthen their digital skills and navigate safely online. Considering the vital role teachers and educators play in that process, there has been a clear need to guide them on how to tackle such pressing issues in their everyday practice, how best to teach digital literacy, translate theory into practice and use the available resources effectively. To this end, various organisations and public authorities, such as ministries of education, have produced guidelines to boost teachers' knowledge and confidence in helping their students identify facts from fake information, make informed choices online and benefit from the opportunities of the digital world.

A number of guidelines on countering disinformation and promoting digital literacy that currently inform teaching in European classrooms were identified through the discussions of the Expert Group (see Appendix 2). In the table below a list of a few examples is presented. These guidelines touch upon various areas, such as media and information literacy and digital citizenship education, and revolve around the promotion of a responsible and safe use of digital technologies. They bring together several dimensions of teaching digital literacy, including the role of the teacher, the class environment, as well as approaches for the development of skills towards the digital empowerment of young people. Developing critical thinking skills and creating a safe space for student-teacher interaction emerge as significant parameters for effective digital literacy. Through practical ideas, real-life examples, model lessons and pedagogical suggestions, the guidelines provide teachers with useful tools to be used in their classrooms and support young people's learning. Building upon and extending the scope of the existing guidelines, the work of the Expert Group adds to the provision of practical guidance to educators and teachers by suggesting practices and approaches towards strengthening young people's digital competences and fostering critical engagement with information online.

Existing Guidelines to counter disinformation and promote digital literacy

1. The European Commission's [Spot and fight disinformation](#) toolkit on identifying and addressing disinformation is targeted at secondary school teachers. It includes an editable presentation with real-life examples and group exercises as well as an instruction booklet for teachers.
2. UNESCO's media and information literacy curriculum, [Media and Information Literate Citizens: Think Critically, Click Wisely!](#), offers a comprehensive competency framework of media and information literacy and structured pedagogical suggestions for educators and learners. See Chapter 4 for a more elaborate description.

Existing Guidelines to counter disinformation and promote digital literacy

3. [The Digital Citizenship Education Handbook](#) by the Council of Europe is intended for teachers and parents, education decision makers and platform providers alike. See Chapter 4 for a more elaborate description.
4. [Teaching and Learning with Twitter](#) is a Twitter and UNESCO resource on media and information literacy that offers practical advice informing pedagogical methods and outcomes. It can help educators with designing lessons around media and information literacy and inform them, as well as other social actors, on how Twitter can be used towards improving learning outcomes.
5. [The Euroguide Handbook](#) aims to offer teachers and social workers practical tools to respond to socio-political or religious arguments in order to prevent radicalisation in school environments. Guidance is offered on how to create resilient environments and safe spaces where vulnerable young people can open up, sharpen their social and emotional skills, and have their self-esteem improved.
6. The International Telecommunication Union (ITU) has issued [Child Online Protection \(COP\) guidelines](#) - a comprehensive set of recommendations for all relevant stakeholders (parents, educators, policy makers, industry) on how to contribute to the development of a safe and empowering online environment for children and young people. Towards this, the advocated approach involves both protection and empowerment of children.
7. [The Information literacy guide for teachers and students](#) (Finland) includes information adapted for school use, group work assignments, and reading and linking tips. Fact Bar EDU teaching materials are designed to be used in schools as part of the curriculum or in adult education in support of lifelong learning.
8. In France, Eduscol (with CLEMI and partners) published, in 2022, a '[vademecum for Media and Information Literacy](#)', which details how to deal with disinformation.
9. [Meta's Get Digital](#): A freely accessible collection of lesson plans, conversation starters, activities, videos, and other resources built with experts to help young people develop the skills and support that people need for safe, meaningful, and empowered participation in a digital world.



Injustices

6. Key insights gained from activities in the Expert Group

This chapter provides an overview of the key activities of the Expert Group, as well as insights gained through reflections and discussions of the Expert Group members. The Expert Group engaged with the theme of tackling disinformation and promoting digital literacy through education and training in multiple ways, including an extensive survey on the experts' experiences with these topics, as well as multiple online working sessions. The experts worked in varying subgroups, on multiple occasions, to maximise cross-fertilisation and an in-depth and vigorous engagement with the subject matter.

6.1: Expert views: brief overview of results from an EU survey that Expert Group members completed.

This subchapter gives a summary of the results of the survey related to tackling disinformation and promoting digital literacy within and across their Member States and sectors.

6.2: Key insights gained from Consultation Event 1: Teacher Workshop during e-Twinning annual conference 'Media literacy and disinformation' on 29 October 2021. This subchapter presents the aims and outcomes of the first consultation event of the Expert Group, aimed at teachers and educators.

6.3: Key insights gained from Consultation Event 2: Online Roundtable discussion with young people in the occasion of Safer Internet Day on 8 February 2022. This subchapter presents the aims and outcomes of the second consultation event of the expert group, aimed at students and youth.

6.4: Key insights gained from Teacher Survey in February 2022. This subchapter provides a summary of the results of the teacher survey, disseminated across EU Member States and beyond.

6.1. Expert views: What is important in tackling disinformation and promoting digital literacy?

In a survey preceding the start of the Expert Group's work, members were able to express their opinions, views and concerns; and to share information about noteworthy relevant practices and resources (e.g. publications, existing guidelines, tools, method) available in Member States. The outcome of the survey helped develop the Final Report outline and steer progress towards the development of the Guidelines for Teachers. Some main findings from the survey are presented below.

Main challenges when promoting digital literacy and tackling disinformation

A key challenge that experts identified was how to actively engage the wide network of public and private stakeholders involved in creating, supporting and consuming information online, especially in a way that

engagement can bring about effective and lasting impact. In addition, the design of effective programs was considered challenging because the world of digital literacy is complex and educational materials need to be presented in accessible ways for all users. Furthermore, experts pointed to the lack of evidence-based interventions, which makes it difficult for policy makers to measure what effective and less effective approaches are. The experts did caution that irrespective of the measures and programs suggested and/or recommended to address disinformation, these should adhere to free speech and free access principles and not inhibit the technical functioning of the internet. Among other things, interventions should avoid the fragmentation of the internet, and ensure that its security, stability and resiliency remain intact.

Finally, they highlighted the challenges that relate to the sophistication and automation of the technology associated with disinformation, such as algorithms, as well as the lack of awareness among teachers and parents regarding the risks associated with the threats that characterise the use of digital media.

Areas in digital literacy which have not been addressed sufficiently in education and training and need to be explored further

Multiple experts pointed to a clear need for pre- and in-service teacher training to better equip educators for the challenges associated with combating disinformation and promoting digital literacy in the 21st century. This can help prepare educators to better support today's youth – at all ages - both within and outside formal educational contexts. The need for further training of educators, not only to raise awareness, but also to help them gain the competences needed to engage their students in creative ways was often mentioned. They also underlined the need to develop digital tools and environments not only for educational purposes, but also to promote individual and social well-being. Finally, multiple respondents pointed to the need for teachers to educate students, and be educated themselves about the motives behind the production of digital (dis)information, in particular the 'business model' behind disinformation.

Key components of effective digital literacy programmes or initiatives

The need for innovative and active approaches when designing digital literacy programs was often mentioned. Teacher-led educational approaches were seen less effective. Digital literacy education, in their view needed to be more student-centred and connect better to the way young people learn in today's complex world (including the use of heavy audio-visual materials, such as videos on YouTube). Reference was often made to highly interactive working methods, in which students play a very active role, such as learning by doing and project-based work. Multiple respondents also mentioned that digital learning needed to be connected to broader issues such as the study of global problems, while maintaining a connection to the existing curriculum and subjects.

Key components of effective programmes or initiatives to combat disinformation

Experts frequently mentioned the need for holistic, long-term approaches. They pointed out that only such approaches could have a real impact on awareness and learning, as well as skill development. Many experts provided examples of how external actors, including civil society and journalists, could be involved in efforts to curtail the spread of false information, for example through awareness raising campaigns or training. Some suggested social media organisations could be active in education. Others cautioned against this, citing risks of influence-buying and white-washing, and pointing to subsequent risks to the credibility of media literacy work overall (Kergueno et al 2021; Schmidt 2020). The various challenges associated with countering disinformation were recognised as being a system-wide in nature, and therefore multiple stakeholders needed to be involved. Experts also frequently mentioned that educators needed more assistance in understanding the more technical aspects of disinformation, as well how to effectively promote the development of critical thinking skills among young people.

6.2. Key insights gained from Consultation Event 1: Teacher Workshop during eTwinning annual conference 'Media literacy and disinformation', on 29 October 2021

The purpose of the workshop 'Digital literacy and tackling disinformation: What are the challenges, what works and what can we build on?' was to offer the eTwinning community, and especially teachers, the opportunity to provide direct input to the development of the teacher Guidelines. The discussions were structured around existing challenges and possible ways forward for teachers to tackle disinformation through teaching digital literacy.

Key messages from the workshop were:

- Disinformation and digital literacy are new and challenging topics for some teachers, and some find it difficult knowing where to even start.
- Disinformation became an even more important topic with the outbreak of the COVID-19 pandemic, as societies were reminded of the importance of evidence-based statements.
- Digital technologies are constantly evolving, which makes it difficult for teachers to keep track of the online engagement of their students.
- Teachers gain a sense of satisfaction when teaching digital literacy, due to its high relevance to their students.
- Students are often shy and hesitant to discuss their online lives with teachers.
- In classrooms, teachers often battle plagiarism as some students are not aware of the importance of respecting intellectual property and not simply copying other people's work.

- Teachers should be empowered with knowledge about disinformation, algorithms, and how to teach digital literacy to students. It can be stressful to teach about unfamiliar topics, especially when there are concerns about being up-to-date or sufficiently capable of using new technologies. However, teachers often lack the time to acquire the necessary level of knowledge and expertise associated with teaching about the digital world.
- Teachers pointed to the need for a central directory of resources that they could turn to for ideas and inspiration.

6.3. Key insights gained from Consultation Event 2: Online Roundtable discussion with young people in the occasion of Safer Internet Days on 8 February 2022

On [Safer Internet Day](#) 2022, an online roundtable discussion on the topic ‘Tapping into the views of young people: Empowering them in the digital world’ brought together young people (pupils, students and youth organisations representatives) to share their views on how education and training could support them in strengthening their digital literacy and empowering them online.

The main takeaways were the following:

- There is a misconception that all young people know how to use digital technologies confidently. While some have well developed digital competences, others have low digital skills and struggle to carry out even basic digital tasks.
- After the outbreak of the pandemic and periods of school closures, students had experienced first-hand digitalisation becoming an everyday issue. Many had struggled with the shift towards remote learning that was brought about by the COVID-19 crisis.
- Digital literacy skills include navigating through an abundance of information, distinguishing facts from falsehoods, as well as using and communicating data and content.
- Digital literacy consists of a broad range of knowledge and competences pertaining to how to better assess digital risks and opportunities, how to behave appropriately and responsibly online, how to engage actively online, and insight into privacy and personal data issues.
- The participants emphasised that it is vital to foster awareness among young people about both the advantages and downsides of using digital technology. Young people are frequently exposed to various online threats (e.g. cyberbullying, discrimination, radicalisation, cybercrime, etc.) and need to know how to handle these threats and protect themselves. It was mentioned that young people need to be taught how to be safe online in the same way they are taught to be safe in the physical world.
- More reflection is needed regarding the limits of digital tools and their influence on teachers and learners. Going digital in education, depending on context and circumstances, is not always the best answer and there are instances where it is more effective to do work offline.

- Safe spaces for both teachers and students are needed, especially when controversial or problematic issues are addressed in class (e.g. conspiracy theories, cyberbullying, child sexual abuse, etc.). Teachers need the necessary skills to manage this well. It was further emphasised that a safe and accepting atmosphere can help educators recognise distress and difficult emotions among young people early on.
- The challenges posed by the ever-evolving world of digitisation requires constant skilling and re-skilling.

6.4. Key insights gained from a teacher survey in February 2022

To better understand the views of teachers, a survey⁶⁵ was distributed online in English. The survey was distributed mainly through the social media accounts of the European Commission, as well as the School Education Gateway and eTwinning platforms. The members of the Expert Group also participated in disseminating the survey.

The questionnaire focused on the needs and priorities of schools and classrooms. This allowed direct input into the development of the teacher Guidelines. Teachers were asked questions relating to, for instance, if and how they were teaching about issues relating to disinformation and digital literacy, who was teaching these topics in the school, what kinds of approaches were being used and what the teachers perceived as their main challenges. A total of 268 teachers from 22 EU Member States⁶⁶ and 16 non-EU countries⁶⁷ participated.

The key findings of the survey were:

- Among the teachers surveyed, half of them (49 %) reported that their school or educational institution had classes/projects (completed or ongoing) relating to addressing disinformation and/or promoting digital literacy.
- It was most common to have this class/project as an initiative across different subject areas (40 %) or as a particular subject (38 %) and less common to implement it as a special programme (17 %) or an after-school activity (10 %).
- The majority (65 %) reported that their students were very interested in the topics.
- A subject teacher was involved in 8 out of 10 classes/projects (81 %) related to disinformation and digital literacy. Next to the subject teachers, the most involved stakeholders in the implementation of such classes/projects were head ‘head teachers/directors/principals’ (30 %), ‘parents and other family members’ (21 %) and ‘academic institutions/universities’ (19 %).
- Asked which subject the class/project was part of, more than half of the teachers reported it was

⁶⁵ The survey does not claim to be a representative sample of teachers in the EU, but only served as a means to gain additional insight into the views of teachers and to help the Experts identify key issues to address in the Teacher Guidelines.

⁶⁶ EU Member States represented by teachers were: AU, BE, DE, DK, ES, FI, FR, GR, HR, HU, IE, IT, LT, LV, MT, NL, PL, PT, ROM, SK, SL and SE.

⁶⁷ Non-EU countries represented by teachers were Armenia, Albania, Azerbaijan, Republic of Bosnia and Herzegovina, Cyprus, Georgia, Guinea-Bissau, Jordan, Republic of Moldova, Republic of North Macedonia, Serbia, Switzerland, Turkey, Tunisia, Ukraine and the United States.

offered as a 'special subject' (51 %) and in 'civics education/social studies' (50 %). It was less common to address digital literacy or disinformation in 'literature' (29 %), 'science' (22 %), 'history' (15 %) or 'ethics/religion' (14 %).

- The challenges that teachers faced the most were: 1.) 'Getting students to open up and talk about what they do online' (43 %) 2.) 'Finding good resources' (42 %) 3.) 'Time constraints' (41 %) and 4.) 'Teaching source criticism and the risks of plagiarism' (41 %).
- More than half of the teachers (54 %) at schools with no plans to address digital literacy and disinformation reported one reason being 'limited digital skills and competences' among colleagues. Other frequently cited reasons were that these topics do not fit into the regular teaching schedule (40 %), were not a school priority (38 %) and that there was a lack of digital equipment (37 %). In contrast, resistance from parents (4 %) and school management (8 %) was not often mentioned among respondents.
- In reference to the guidelines, a clear majority of teachers responded that they wanted to see 'examples adapted for students of different ages' (73 %), 'examples of ready-made lesson plans' (67 %), and 'teacher guidance and instructions for different subjects' (67 %), as well as 'a summary of useful resources' (61 %).

Teachers with prior experience working with projects/classes related to digital literacy and disinformation offered the following recommendations with respect to the guidelines:

- The guidelines should be short, clear, provide measurable learning objectives, and contain lesson plans and exercises. They should also offer resources tailored to students at different school levels and with different needs.
- The guidelines should foster awareness about the risks associated with plagiarism and sharing personal data online. Particular attention should be paid to the importance of verifying sources, respecting intellectual rights associated with online content and taking precautions when using social media.
- The guidelines should meet the needs of teachers who are less digitally literate. Teachers themselves often struggle with digital literacy and need to be continuously trained in digital literacy and tackling disinformation.

Finally, some of the respondents, in the open-ended questions, made the following recommendations for teaching colleagues:

- Projects that address digital literacy and disinformation are time-consuming and often require concerted effort. Time can be freed up by involving several (teacher) colleagues from different subject areas. To gain support, make sure to report back to the head teacher and advertise on the local school website.
- In interactions with students, it is fundamental to make students feel at ease so that they can open up, given that it can be difficult to talk about particular online experiences in front of other classmates.

- Students can be engaged by asking them to share their personal experiences and their experience with disinformation – This can be done by posing questions such as: when was the last time you saw fake-news? Another efficient way to engage them is to play games involving disinformation.

FINAL
THOUGHTS



7. Conclusions and Recommendations for teachers and educators with a view towards the Guidelines

This chapter presents the Expert Group's recommendations to teachers and educators. The recommendations also serve as the starting point for the planned Guidelines for Teachers and Educators.

Conclusions and Recommendations for teachers and educators

- Student-centred educational approaches with proper support from teachers, as well as research-based materials have shown to be highly effective in promoting digital literacy and making students more resilient to disinformation online. Students (especially at the secondary level and higher) are often more comfortable with digital media and use it frequently. The teacher's role is increasingly to offer the necessary context, critical reflection and support. Respectful interaction between teachers and students, as well as honest conversations can help build trust and strengthen the teacher-student relationship. Teachers need support in strengthening their abilities to take on such new roles and responsibilities.
- Students need to be challenged by their teachers to think outside the box and question their assumptions about the digital world.
- Overconfident students need support and constructive, age-appropriate, feedback to see their own biases and limitations when it comes to digital literacy.
- At the school level digital literacy and media literacy initiatives are most effective both as an integrated cross-subject and a separate subject approach, meaning there is room for both in a school. A combination of both formal and non-formal educational initiatives is also highly effective.
- Teachers need guidance in terms of the various criteria that relate to digital literacy, such as what criteria to use when selecting appropriate resources and approaches. They also need support in terms of developing lesson plans in an often-overcrowded schedule.
- Given the vast experience most students have with digital platforms and social media, they can provide teachers with insights that can be the basis for further learning.
- Teachers need effective instruments to assess their own progress and their ability to navigate the challenges posed by teaching in digital environments. They might need assistance from colleagues when they encounter challenges. Where possible it is beneficial to join teacher networks where such challenges and potential solutions are discussed.
- Teachers and educators, as pedagogical experts, can tap into the vast potential of the digital world to promote student knowledge and understanding. More than ever before, students can find the most up to date information, interact online with experts and other students, connect with students around the world and collaborate with them, stay up to date about societal developments, conduct

research, etc.

- Teachers tend to have overly full schedules. They need to be provided with the time to upgrade their knowledge and competences relating to digital literacy.
- Teachers have a right to teach in a safe environment. Mechanisms should be put in place at the school level to support them in addressing challenges they might encounter. Such initiatives can benefit from including school psychologists and social workers.
- There is no ‘one size fits all’ when it comes to educational approaches to promoting digital literacy and addressing disinformation. Teachers can best judge what works best in their own learning environment, with respect to existing student competences, the subject being taught, support from school management, relations with the outside community, etc.
- There are differences between misinformation and disinformation, as well as the distinct challenges and solutions associated with both. This has implications for teaching.
- Teachers need assistance in identifying and implementing effective resources and strategies that engage students in critical analysis.
- Disinformation is often targeted at those with non-majority backgrounds. Therefore, an equity lens is needed when addressing disinformation and its consequences.
- Motivating students to become more digitally literate can be challenging. Sharing strategies and learning new strategies can be an effective tool to promote digital literacy.
- It is important to be aware of the various legal and privacy concerns related to interventions into the digital worlds of students, such as blogs and social media platforms. This also applies to general privacy issues related to digital media.
- Teachers can benefit from upskilling their teaching repertoire to meet the needs of education in the digital world. This includes gaining competences to work with video and podcasts, online research and interviewing, gaming, social media campaigns, storytelling, and tackle online hate speech and cyberbullying. This also applies to furthering one’s knowledge about key issues connected to the digital universe such as fact resistance, truth bias, echo chambers, confirmation bias, identity threat, backfire effect and illusion of truth, cheap fakes and deep fakes.
- Discussions relating to disinformation, for instance discussions about conspiracy theories, can be controversial and provoke (strong) emotions. This implies having sufficient knowledge about how to effectively introduce and facilitate controversial issues. In some cases, this goes hand in hand with the ability to create a safe place in the classroom where students feel comfortable expressing their opinions and the ability to guide discussions effectively. School psychologists and social workers also play a role here.
- Relevant NGOs can support teachers in the work around disinformation and digital literacy.
- In the area of digital literacy, students are well positioned to co-create a variety of digital materials and learning resources, and to disseminate the outcomes of their creative work. Traditional educational approaches are less effective in such instances. Teachers, as classroom managers, can guide and empower their students in this process. Students teaching other students (peer education) is also a valuable approach
- Digital literacy is best accomplished if student work starts from their interests, using devices they

are most familiar with. This will help them become lifelong learners and responsible citizens, as well as positive social actors. Colleagues, parents and the wider community have the potential to play a role in this process in a joint effort.

- Feedback loops between teachers and the research community promote reflection and learning. The development of digital literacy is best informed by the latest scientific knowledge.

Conclusions and Recommendations for initial and continuous teacher education/training

- Presently, ITE (initial teacher education) courses focusing on digital literacy are often optional. Given the critical role that digital literacy plays in contemporary learning, it is important that digital literacy courses become more prominently integrated into ITE. Ideally, all ITE programmes and courses would contain such elements.
- The DigCompEdu framework, which describes what it means for educators to be digitally competent and identifies 22 key competences, can serve as an excellent starting point for all ITE and continuous teacher professional education (CPD).
- In addition to integrating elements of digital literacy into all ITE courses, a specific course on combating disinformation, building resilience, as well as digital and information literacy is recommended as a separate course in all ITE institutions. Such a course should be a compulsory part of all teacher education programmes.
- Continuous teacher professional development should be based on active learning and should be situated, extended in time, participatory and linked to educational practice. CPD opportunities should align with the needs of both schools and national educational frameworks.
- More attention needs to be devoted to the training of teacher educators and professional development providers, since they are multipliers.
- Any ITE or CPD related education needs to make use of engaging materials and approaches that have demonstrated their value, especially through evaluation, while allowing for flexibility due to cultural and other situational factors. Materials and approaches should also be age appropriate.
- ITE and CPD can benefit by connecting teachers and educators to existing initiatives that promote digital literacy at the national and international level. This would promote the sharing of experiences and support transferability of good digital literacy practices across the EU.
- Reliable measurement instruments are needed to assess baseline levels of digital literacy among both teachers and students. This will assess the impact of teaching practices.
- Digital literacy is a complex phenomenon, and simplistic assessment instruments should be avoided. Schools, teachers and students can benefit from clear assessment guidelines that are subject sensitive. The use of standard assessment standards can promote better understanding of where gaps exist and where further efforts and measures are needed to address gaps.
- Teachers need specific training and guidance relating to how they can best assess the progress that their students are making in terms of their digital literacy competences.
- Teachers would benefit from specific training relating to how they can best assess their own digital literacy and their own progress in digital literacy.

- Since the measurement of digital literacy is relatively new, more research is needed to arrive at the most adequate assessment instruments for students across all age groups and all school types.
- More research is needed to identify which ITE and CPD programmes are the most effective in promoting digital literacy and why.
- The systematic evaluation of students' digital literacy skills at regional/national/EU level would be useful. This will make it possible to compare and follow developments on an aggregated level.

ENABLE



8. Enablers for tackling disinformation and promoting digital literacy

The project upon which this Report is based focuses on teachers, educators and schools. Yet the larger playing field in which they operate also provide insights into what kinds of interventions can have an impact. Chapter 8 presents enablers, identified by the members of the Expert Group aimed at policy makers. These can be considered as pointers and reflections that these stakeholders are encouraged to consider.

For policy makers at European⁶⁸, national and regional level

- Promoting digital literacy and combating disinformation in educational settings go hand in hand. This has consequences for educational policy.
- Developing digital literacy should start at a young age. Educational policies should address initiatives that focus on the youngest age groups as well.
- The key guarantor for the sustainable development of digital literacy competences is a cross-subject approach. This should be accompanied with the treatment of digital literacy as a separate subject with a whole-school approach, including inter alia, thematic weeks, multi-actor projects, etc.
- Digital literacy programmes, projects and training benefit from transparency in terms of how they are funded and supported. On occasion, commercial and/or party-political interests dominate and are not neutral.⁶⁹
- Access to digital technology in education is still lacking in some places. Also, certain communities have less access to digital technology. This impacts educational attainment and inclusion. It also impacts the opportunity for critical engagement and digital empowerment. Appropriate policy measures need to address the digital divide.
- Given the impact of social media and other new media in the lives of young people today, it is important to explore how existing educational policies promote the responsible use of such media and develop digital literacy.
- The evaluation of existing programmes that aim to promote digital literacy and combat disinformation in education should be supported through policy measures.
- Collaboration between stakeholders needs to be supported. Important stakeholders include universities, professional journalistic organisations, libraries, NGO's and educational institutions such as schools.
- Teachers need sufficient training to promote digital competences among students and to build resilience against disinformation. Policy measures need to provide teachers with such opportunities and should be part of both initial and continued professional development

⁶⁸ Where the principle of subsidiarity allows

⁶⁹ See also the [recommendations by the 2018 High Level Expert Group on Fake News and Online Disinformation](#).

programmes for teachers.

- Concrete and useful teaching tools should be developed and made available to teachers to strengthen their ability to deal with issues and themes that may be perceived as controversial, create tension, and arouse emotions in society and among students. Informing parents/carers and collaborating with them, when implementing school programmes to counter disinformation, can provide both rich learning opportunities but can also pose challenges if there is resistance. Teachers and schools need additional support in such instances in view of helping foster a whole community approach.
- Good practices in promoting digital literacy and combating disinformation in educational settings should be recognised and made visible. Those should be further promoted, made sustainable and upscaled where possible.

9. References

- Agrusti, G., Ainley, J., Busch, C., Friedman, T., Gebhardt, E., Kobelt, J., Köhler, H., Noveanu, G. N., Savaşçı, D., Tieck, S., & Weber, S. (2016). *International Civic and Citizenship Education Study 2016* (W. Schulz, B. Losito, R. Carstens, & J. Fraillon, Eds.). International Association for the Evaluation of Educational Achievement. https://www.iea.nl/sites/default/files/2019-07/ICCS%202016_Technical%20Report_FINAL.pdf
- Alexander, B. (2008). *The globalisation of addiction. A study in poverty of the spirit*. Oxford University Press.
- Allcott, Hunt, and Matthew Gentzkow. (2017). Social Media and Fake News in the 2016 Election. *Journal of Economic Perspectives*, 31 (2): 211-36.
- Anderson, T., & Shattuck, J. (2012). Design-Based Research: A Decade of Progress in Education Research? *Educational researcher*, 41(1), 16-25. doi:10.3102/0013189x11428813
- Andriopoulou, I., Panagiotou N., (2022). Media Literacy in Greece during COVID-19 pandemic: A necessity-driven approach towards impact for post pandemic era. *The Routledge Handbook on Media Education Futures Post pandemic*. Friesem, Y., Raman, U., Kanižaj, I., & Choi, G.Y. (Eds). Routledge.
- Arcos, R. (2018). Post-event analysis of the hybrid threat security environment: assessment of influence communication operations. Hybrid CoE Strategic Analysis 12. Available at: <https://www.hybridcoe.fi/wp-content/uploads/2020/07/Strategic-Analysis-2018-12-Arcos.pdf>.
- Axelsson, C.-A.W.; Guath, M.; Nygren, T. (2021). Learning How to Separate Fake from Real News: Scalable Digital Tutorials Promoting Students' Civic Online Reasoning. *Future Internet*, 13, 60. Available at: <https://doi.org/10.3390/fi13030060>
- Barnes, R. & Potter, A. (2020). Sharenting and parental digital literacy: an agenda for future research. *Communication Research and Practice*, 1–15. doi:10.1080/22041451.2020.1847819
- Basol, M., Roozenbeek, J., Berriche, M., Uenal, F., McClanahan, W. P., & Linden, S. v. d. (2021). Towards psychological herd immunity: Cross-cultural evidence for two prebunking interventions against COVID-19 misinformation. *Big Data & Society*, 8(1), 20539517211013868. doi:10.1177/20539517211013868
- Baumeister, R. & Leary, M. (1995). The Need to Belong: Desire for Interpersonal Attachments as a Fundamental Human Motivation. *Psychological Bulletin*, June 1995. doi: 10.1037/0033-2909.117.3.497
- Beck, T. A. (2003). "If he murdered someone, he shouldn't get a lawyer": Engaging young children in civics deliberation. *Theory & Research in Social Education*, 31(3), 326-346.
- Belgian Senate (2021). Informatieverslag betreffende de noodzakelijke samenwerking tussen de federale overheid en de Gemeenschappen inzake de bestrijding van fake news. 7-110/3. Zitting 2021-2022. 25.10.2021. <https://www.senate.be/www/?MIval=/Dossiers/Informatieverslag&LEG=7&NR=110&LANG=nl>
- Benkler, J., Faris R. and Hals Robert, *Network propaganda : manipulation, disinformation and radicalization in American politics*, OUP, 2018
- Borko, H., Jacobs, J., & Koellner, K. (2010). *Contemporary approaches to teacher professional development*. In P. L. Peterson, E. Baker, & B. McGaw (Eds.). *International Encyclopedia of Education* (pp. 548–556). Elsevier.
- Brante, E. W., & Strømsø, H. I. (2018). Sourcing in Text Comprehension: a Review of Interventions Targeting Sourcing Skills. *Educational Psychology Review*, 30(3), 773-799. doi:10.1007/s10648-017-9421-7

- Breakstone, J., Smith, M., Wineburg, S., Rapaport, A., Carle, J., Garland, M., & Saavedra, A. (2021). Students' Civic Online Reasoning: A National Portrait. *Educational researcher*, 50(8), 505-515. doi:10.3102/0013189X211017495
- Brion, A., (2020). L'infodémie à l'école: déconfinons l'esprit critique. *Le Soir*. <https://www.lesoir.be/307881/article/2020-06-17/infodemie-lecole-deconfinons-lesprit-critique>
- Bulger, M. E., Mayer, R. E., and Metzger, M. J. (2014). Knowledge and processes that predict proficiency in digital literacy. *Reading and Writing*, 27(9), 1567-1583.
- Cachia, R., Velicu, A., Chaudron, S., Di Gioia, R. and Vuorikari, R. (2021). *Emergency remote schooling during COVID-19*. EUR 30866 EN. Luxembourg: Publications Office of the European Union. ISBN 978-92-76-42550-2, doi:10.2760/613798, JRC125787.
- Caena, F. (2011). Literature review Quality in Teachers' continuing professional development. *European Commission, Education and Training 2020 Thematic Working Group "Professional Development of Teachers"*.
- Carlsson, U. (2019). Understanding Media and Information Literacy (MIL) in the Digital Age. A Question of Democracy. Gothenburg: Department of Journalism, Media and Communication (JMG) University of Gothenburg. Available at: https://en.unesco.org/sites/default/files/gmw2019_understanding_mil_ulla_carlsson.pdf
- Carpenter, S. K., Witherby, A. E., & Tauber, S. K. (2020). On Students' (Mis) judgments of Learning and Teaching Effectiveness. *Journal of Applied Research in Memory and Cognition*.
- Carretero Gomez, S., Punie, Y., Vuorikari, R., Cabrera Giraldez, M. and Okeeffe, W., editor(s), Kluzer, S. and Pujol Priego, L., (2018) *DigComp into Action: Get inspired, make it happen. A user guide to the European Digital Competence Framework*, EUR 29115 EN, Publications Office of the European Union, Luxembourg, doi:10.2760/1
- Chaudron, S., Di Gioia, R. & Gemo, M. (2018). 'Mum, Dad, look what I can do with digital technologies at home!' Young children, parents and digital technologies in the home context across Europe. In: *Les cultures médiatiques de l'enfance et de la petite enfance - MEDIA CULTURES OF EARLY CHILDHOOD*, 06-08 April 2016, Maison de l'Homme, Paris, *Les cultures médiatiques de l'enfance et de la petite enfance*, 2018, ISBN 978-2-9549483-2-4 (online)(FRE), p. 78-96, JRC104185.
- Chesney, R., & Citron, D. K. (2018). 21st century-style truth decay: Deep fakes and the challenge for privacy, free expression, and national security. *Md. L. Rev.*, 78, 882.
- Cinelli, M., Morales, G. D. F., Galeazzi, A., Quattrociocchi, W., & Starnini, M. (2021). The echo chamber effect on social media. *Proceedings of the National Academy of Sciences*, 118(9).
- Clark, L.S. (2013) Cultivating the media activist: How critical media literacy and critical service learning can reform journalism education. *Journalism* 14(7) 885–903. Available [here](#).
- Clarke, D., & Hollingsworth, H. (2002). Elaborating a model of teacher professional growth. *Teaching and Teacher Education*, 18(8), 947-967.
- Comunello, F., Rosales, A., Mulargia, S., Ieracitano, F., Belotti, F., & Fernández-Ardèvol, M. (2020). 'Youngsplaining' and moralistic judgements: Exploring ageism through the lens of digital 'media ideologies'. *Ageing and Society*, 1-24. doi:10.1017/S0144686X20001312
- Council of Europe. (2016). Mapping of media literacy practices and actions in EU-28, available [here](#).
- Council of Europe. (2018). Reference Framework of Competences for Democratic Culture. Available at:

<https://www.coe.int/en/web/reference-framework-of-competences-for-democratic-culture/>

Council of Europe. (2018). *Reference Framework of Competences for Democratic Culture: Volume 1 Context, concepts and model*. <https://rm.coe.int/prems-008318-gbr-2508-reference-framework-of-competences-vol-1-8573-co/16807bc66c>

Council of Europe. (2018b). *Reference Framework of Competences for Democratic Culture: Volume 2 Descriptors*. <https://rm.coe.int/prems-008418-gbr-2508-reference-framework-of-competences-vol-2-8573-co/16807bc66d>

Council of Europe. (2018c). *Reference Framework of Competences for Democratic Culture: Volume 3 Guidance for implementation*. <https://rm.coe.int/prems-008518-gbr-2508-reference-framework-of-competences-vol-3-8575-co/16807bc66e>

Creswell, J. W., & Clark, V. L. P. (2017). *Designing and conducting mixed methods research*. Sage publications.

D.K. Citron & R. Chesney, “Deep Fakes: A Looming Challenge for Privacy, Democracy, and National Security”, *California Law Review*, vol. 107, no. 692, 2018, pp. 4-5

Damstra A, Vliegenthart R, Boomgaarden H, et al. Knowledge and the News: An Investigation of the Relation Between News Use, News Avoidance, and the Presence of (Mis)beliefs. *The International Journal of Press/Politics*. July 2021. doi:10.1177/19401612211031457

Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017). *Effective teacher professional development*. Learning Policy Institute.

DeLuca, C., Coombs, A., and LaPointe-McEwan, D. (2019). Assessment mindset: Exploring the relationship between teacher mindset and approaches to classroom assessment. *Studies in Educational Evaluation*, 61, 159-169

Desimone, L. M. (2009). Improving impact studies of teachers’ professional development: Toward better conceptualizations and measures. *Educational Researcher*, 38(3), 181-199.

Di Bernardo, G. et al. (2021). Following the best of us to help them: Group member prototypicality and collective action. *Group Processes & Intergroup Relations*. October 2021. doi:10.1177/13684302211038062

Ecker, U. K., Lewandowsky, S., Cook, J., Schmid, P., Fazio, L. K., Brashier, N., ... & Amazeen, M. A. (2022). The psychological drivers of misinformation belief and its resistance to correction. *Nature Reviews Psychology*, 1(1), 13-29.

EDMO-European Digital media Observatory. (2021, May 26). National EDMO hubs announced. Available at: <https://edmo.eu/2021/05/26/national-edmo-hubs-announced/>

European Commission, Directorate-General for Education, Youth, Sport and Culture, (2020). Conference on supporting key competences development: learning approaches and environments in school education: conference report, Brussels, 12-13 November 2019, Publications Office.

European Commission. (2018). Final report of the High Level Expert Group on Fake News and Online Disinformation. Available at: <https://www.ecsite.eu/activities-and-services/resources/final-report-high-level-expert-group-fake-news-and-online>

European Commission. (2021). *Conspiracy theories and right-wing extremism – Insights and recommendations for P/CVE*. https://ec.europa.eu/home-affairs/system/files/2021-04/ran_conspiracy_theories_and_right-wing_2021_en.pdf

European Commission. (n.d.). *Council Recommendation on Key Competences for Lifelong Learning*.

European Education Area. <https://education.ec.europa.eu/focus-topics/improving-quality-equity/key-competences-lifelong-learning>

European Commission/EACEA/Eurydice (2019). *Digital Education at School in Europe. Eurydice Report*. Luxembourg: Publications Office of the European Union https://eacea.ec.europa.eu/national-policies/eurydice/sites/default/files/en_digital_education_n.pdf

European Education and Culture Executive Agency, Eurydice, Birch, P., Piedrafita Tremosa, S., Davydovskaia, O. (2019). *Teaching careers in Europe: access, progression and support*, (A,Delhaxhe,editor) Publications Office. <https://data.europa.eu/doi/10.2797/708723>

European Federation of Academies of Sciences and Humanities (allea). FACT OR FAKE? TACKLING SCIENCE DISINFORMATION. 2022. Available [here](#).

European Observatory of Audiovisual Media (2017), Mapping of Media Literacy practices and actions, Strasbourg COE publishing.

Eurostat. (2020). *Being young in Europe today - digital world*. Accessed [here](#).

European Parliament (2021), J.SZAKÁCS, É. BOGNÁR, *The impact of disinformation campaigns about migrants and minority groups in the EU*. Accessed [here](#).

Ferrari, A. (2013) DIGCOMP: A Framework for Developing and Understanding Digital Competence in Europe. Scientific and Policy Report by the Joint Research Centre of the European Commission.

Finnish Ministry of Education and Culture, New Literacies Programme, 2021, available [here](#).

Fishman, B., Marx, R., Best, S., & Tal, R. (2003). Linking teacher and student learning to improve professional development in systemic reform. *Teaching and Teacher Education*, 19(6), 643–658.

Fletcher, R., Cornia, A., Kleis Nielsen, R. (2019) « How Polarized Are Online and Offline News Audiences? A Comparative Analysis of Twelve Countries » the international journal of press/politics.

Fowler-Watt, K. and McDougall, J. Sleepwalking into Information War? (in: Conversations) In press

Foulger, T. S., Wetzel, K., & Buss, R. R. (2019). Moving toward a Technology Infusion Approach: Considerations for Teacher Preparation Programs. *Journal of Digital Learning in Teacher Education*, 35(2), 79–91. <https://doi.org/10.1080/21532974.2019.1568325>

Frau-Meigs, D (2019a). Faut-il avoir peur des “fake news”? La Documentation française.

Frau-Meigs, D (2021). Les enjeux de la réception : comment mesurer l’influence de la désinformation ? in Marange, C and Quessard, M Céline (eds). *Les guerres de l’information à l’ère numérique*. PUF.

Frau-Meigs, D, Kotilainen, S. Pathek-Shelat, Hoeschmann, M and Poyntz, S. (2020) *Handbook of Media Education Research*. Wiley.

Frau-Meigs, D. (2019b). A curriculum for MIL teaching and learning, 57-66 in Ulla Carlsson (ed), *Understanding MIL in the Digital Age, a question of democracy*. Goteborg.

Frau-Meigs, D. (2022). The Media and Information Literacy turn in France: from Charlie Hebdo to Samuel Paty, 5 years of media panics on radicalization and disinformation. in Friesem, Y., Raman, U., Kanižaj, I., & Choi, G.Y. (Eds). *The Routledge handbook on media education futures post pandemic*. Routledge.

Frau-Meigs, D., Velez, I. & Flores, J. (2017). Public Policies in Media and Information Literacy in Europe Cross-Country Comparisons.

Frechette, J. D., & Williams, R. (Eds.). (2016). *Media education for a digital generation*. New York: Routledge.

Friesem, Y., Raman, U., Kanižaj, I., & Choi, G.Y. (Eds). (2022) *The Routledge handbook on media education futures post pandemic*. Routledge.

- Garcia-Camargo, I. & Bradshaw, S. (2021). Hybrid CoE Working Paper 11: Disinformation 2.0: Trends for 2021 and beyond. *Hybrid CoE*. 10-17. Retrieved from: https://www.hybridcoe.fi/wp-content/uploads/2021/07/20210716_Hybrid_CoE_Working_Paper_11_Disinfo_2_0_WEB.pdf
- Garrett, R.K., Stroud, N J. (2014) « Partisan Paths to Exposure Diversity: Differences in pro- and Counterattitudinal News Consumption » *Journal of Communication*, Volume 64, Issue 4, Pages 680–701
- Gillies, R. (2011). Promoting thinking, problem-solving and reasoning during small group discussions. *Teachers and Teaching: Theory and Practice*, 17(1), 73-89.
- Gillies, R., & Khan, A. (2009). Promoting reasoned argumentation, problem-solving and learning during small-group work. *Cambridge Journal of Education*, 39(1), 7-27.
- Godhe, Anna-Lena (2019). Digital Literacies or Digital Competence: Conceptualizations in Nordic Curricula. University of Gothenburg
- Government Offices of Sweden. (2020). The democratic conversation in a digital age - How we strengthen the resistance to disinformation, propaganda and cyber-hatred. Available [in Swedish] at: <https://data.riksdagen.se/fil/80724399-0134-4266-B793-36A67FF78EC6>
- Grizzle, A., Moore, P., Dezuanni, M., Asthana, S., Wilson, C., Banda, F., & Onumah, C. (2014). *Media and information literacy: policy and strategy guidelines*. UNESCO. Available [here](#).
- Gudmundsdottir, G. B., and Hatlevik, O. E. (2018). Newly qualified teachers' professional digital competence: implications for teacher education. *European Journal of Teacher Education*, 41(2), 214-231
- Guess, A. M., Lerner, M., Lyons, B., Montgomery, J. M., Nyhan, B., Reifler, J., & Sircar, N. (2020). A digital media literacy intervention increases discernment between mainstream and false news in the United States and India. *Proceedings of the National Academy of Sciences*, 117(27), 15536. doi:10.1073/pnas.1920498117
- Guess, A.M., Nyhan, B. Jason Reifler, J. (2018). Selective Exposure to Misinformation: Evidence from the consumption of fake news during the 2016
- Guess, A. M., Nyhan, B., & Reifler, J. (2020). Exposure to untrustworthy websites in the 2016 US election. *Nature human behaviour*, 4(5), 472-480. Available here: <http://www.dartmouth.edu/~nyhan/fake-news-2016.pdf>
- Haider, J. & Sundin, O. (2019). *Invisible search and online search engines: the ubiquity of search in everyday life*. Milton Park, Abingdon, Oxon: Routledge, Taylor & Francis Group.
- Haider, J., & Sundin, O. (2020). Information literacy challenges in digital culture: conflicting engagements of trust and doubt. *Information, Communication & Society*, 1-16. doi:10.1080/1369118X.2020.1851389
- Hansen-Staszyński, O., Staszyńska-Hansen, B. (2022). Creating the right environment for tackling disinformation in the classroom. *Academia Letters*, Article 5012. <https://doi.org/10.20935/AL5012>
- Hao, K. (2021, 20 November). How Facebook and Google fund global misinformation. *MIT Technology Review*. Available at: <https://www.technologyreview.com/2021/11/20/1039076/facebook-google-disinformation-clickbait>
- Helsper, E. J. (2012). A corresponding fields model for the links between social and digital exclusion. *Communication theory*, 22(4), 403-426.
- Hendricks, V.F., Vestergaard, M. (2019). Fact Resistance, Populism, and Conspiracy Theories. In: *Reality Lost*. Springer, Cham. https://doi.org/10.1007/978-3-030-00813-0_5
- Hidalgo-Andrade, P., Hermosa-Bosano, C., & Paz, C. (2021). Teachers' mental health and self-reported coping strategies during the COVID-19 pandemic in Ecuador: A mixed-methods study. *Psychology Research*

and *Behavior Management*, 14, 933.

Holloway, D., Green, L., & Livingstone, S. (2013). *Zero to eight: Young children and their internet use*. EU Kids Online. LSE, London, EU Kids Online, London, UK. Available at: <http://eprints.lse.ac.uk/52630/>

Hwang, Y., Ryu, J. Y., & Jeong, S.-H. (2021). Effects of Disinformation Using Deepfake: The Protective Effect of Media Literacy Education. *Cyberpsychology, Behavior, and Social Networking*, 24(3), 188-193. doi:10.1089/cyber.2020.0174

IFLA (2017). How to spot fake news. IFLA blogs. Retrieved from: <https://repository.ifla.org/handle/123456789/167>

Insights, M., and Chapman, M. (2016). Mapping of media literacy practices and actions in EU-28. European Audiovisual Observatory

Jeong, S.-H., Cho, H., & Hwang, Y. (2012). Media literacy interventions: A meta-analytic review. *Journal of communication*, 62(3), 454-472.

Jones-Jang, S. M., Mortensen, T., & Liu, J. (2021). Does Media Literacy Help Identification of Fake News? Information Literacy Helps, but Other Literacies Don't. *American Behavioral Scientist*, 65(2), 371-388. doi:10.1177/0002764219869406

Kahne, J., & Bowyer, B. (2017). Educating for democracy in a partisan age: Confronting the challenges of motivated reasoning and misinformation. *American educational research journal*, 54(1), 3-34.

Keegan, P. (2021). Critical affective civic literacy: A framework for attending to political emotion in the social studies classroom. *The Journal of Social Studies Research*, 45(1), 15–24. <https://doi.org/10.1016/j.jssr.2020.06.003>

Kergueno, R., Aoissa, N., Pearson, L., Corser, N. S., Teixeira, V., van Hulst, M., (2021). Deep Pockets, Open Doors. *Transparency International*. https://transparency.eu/wp-content/uploads/2021/02/Deep_pockets_open_doors_report.pdf

Kerr, D. & Huddleston, T. (2020). Learning How to Handle Controversial Issues in Schools and Other Education Settings - a Good Practice Guide. Strasbourg: Council of Europe. Accessed from: <https://rm.coe.int/learning-how-to-handle-controversial-issues-in-schools-and-other-educa/1680a12734>

Kerr, D., Keating, A. and Ireland, E. (2009). *Pupil Assessment in Citizenship Education: Purposes, Practices and Possibilities*. Report of a CIDREE Collaborative Project. Slough: NFER/CIDREE. <https://www.nfer.ac.uk/publications/PCE01/PCE01.pdf>

Kim, H., Garrido, P., Tewari, A., Xu, W., Thies, J., Nießner, M., . . . Theobalt, C. (2018). Deep Video Portraits. *arXiv preprint arXiv:1805.11714*.

Kirschner, P. A., & van Merriënboer, J. J. (2013). Do learners really know best? Urban legends in education. *Educational psychologist*, 48(3), 169-183.

Kitchens, B., Johnson, S. L., & Gray, P. (2020). Understanding Echo Chambers and Filter Bubbles: The Impact of Social Media on Diversification and Partisan Shifts in News Consumption. *MIS Quarterly*, 44(4).

Knobel, M., and Lankshear, C. (2018). *Researching new literacies: Design, theory, and data in sociocultural investigation*. Peter Lang Publishing Group

Köbis, N. C., Doležalová, B., & Soraperra, I. (2021). Fooled twice: People cannot detect deepfakes but think they can. *iScience*, 24(11), 103364. doi:<https://doi.org/10.1016/j.isci.2021.103364>

Kozyreva, A., Lewandowsky, S., & Hertwig, R. (2020). Citizens Versus the Internet: Confronting Digital Challenges With Cognitive Tools. *Psychological Science in the Public Interest*, 21(3), 103-156.

doi:10.1177/1529100620946707

Ku, K. Y. L., Kong, Q., Song, Y., Deng, L., Kang, Y., & Hu, A. (2019). What predicts adolescents' critical thinking about real-life news? The roles of social media news consumption and news media literacy. *Thinking Skills and Creativity*, 33, 100570. doi: <https://doi.org/10.1016/j.tsc.2019.05.004>

Kumpulainen, K. and Gillen, J. (2017) Young Children's Digital Literacy Practices in the Home: A Review of the Literature. COST ACTION ISI1410 DigiLitEY. ISBN: 9780902831469, available [here](#).

Kvetanová, Z. & Kačincová-Predmerská, A.& Švecová, M. (2020). Debunking as a Method of Uncovering Disinformation and Fake News. 2. Retrieved from: <https://www.intechopen.com/chapters/73323>.

Kyza, E., Agesilaou, A., Georgiou, Y., & Hadjichambis, A. (2022). Teacher-researcher co-design teams: Teachers

as intellectual partners in design. In A. C. Superfine, S. R. Goldman & M. -L. M. Ko (Eds.), *Teacher Learning in Changing Contexts: Perspectives from the Learning Sciences*. Routledge.

Lambert, E. and Mazzone, G. (2021). Level Playing Field e responsabilità editoriale. *Democrazia Futura* 1, 2021, 73-79. Available at: <https://www.giampierogramaglia.eu/wp-content/uploads/2021/06/4.0-Democrazia-Futura.pdf>

Law, N., Woo, D., de la Torre, J., and Wong, G. (2018). *A global framework of reference on digital literacy skills for indicator 4.4. 2*. Unesco Institute for Statistics.

Lewandowsky, S. & van der Linden, S. (2021). Countering Misinformation and Fake News Through Inoculation and Prebunking, *European Review of Social Psychology*. 28-29. DOI: 10.1080/10463283.2021.1876983. Available [here](#).

Lewandowsky, S., & van der Linden, S. (2021). Countering Misinformation and Fake News Through Inoculation and Prebunking. *European Review of Social Psychology*, 1-38. doi:10.1080/10463283.2021.1876983

Lewandowsky, S., & Yesilada, M. (2021). *Inoculating Against The Spread Of Islamophobic And Radical-Islamist Disinformation*. Retrieved from University of Bristol: <https://crestresearch.ac.uk/resources/inoculating-against-the-spread-of-islamophobic-and-radical-islamist-disinformation/>

Lewandowsky, S., Ecker, U. and Cook, J. (2017) Beyond Misinformation: Understanding and Coping with the "Post-Truth" Era. *Journal of Applied Research in Memory and Cognition* 6 (2017) 353–369.

Lewandowsky, S., Ecker, U., Seifert, C., Schwarz, N. and Cook, J. (2012.) Misinformation and its correction: continued influence and successful debiasing. *Psychol.Sci. Public. Interest*. 13, 106–131. Available at: <https://journals.sagepub.com/doi/full/10.1177/1529100612451018>

Litt, E. (2013). Measuring users' internet skills: A review of past assessments and a look toward the future. *New Media & Society*, 15(4), 612-630.

Liu, L., Donbavand, S., Hoskins, B., Janmaat, J. G., & Kavadias, D. (2021). Measuring and Evaluating the Effectiveness of Active Citizenship Education Programmes to Support Disadvantaged Youth. *Social Sciences*, 10(10), [394]. <https://doi.org/10.3390/socsci10100394>

Livingstone, S., Ólafsson, K., Helsper, E. J., Lupiáñez-Villanueva, F., Veltri, G. A., & Folkvord, F. (2017). Maximizing opportunities and minimizing risks for children online: The role of digital skills in emerging strategies of parental mediation. *Journal of Communication*, 67(1), 82–105.

Lo, J. C., & Adams, C. I. (2018). Civic literacy through literacy instruction: Using Structured Academic

- Controversy in a government classroom. *Citizenship Teaching Learning and Instruction*, 13(1), 83-104.
- Lopes, P., Costa, P., Araujo, L. & Ávila, P. (2018). Measuring media and information literacy skills: Construction of a test. *Communications*, 43(4), 508-534. <https://doi.org/10.1515/commun-2017-0051>
- Lurie, E., & Mustafaraj, E. (2018, May). Investigating the Effects of Google's Search Engine Result Page in Evaluating the Credibility of Online News Sources. In *Proceedings of the 10th ACM Conference on Web Science* (pp. 107-116).
- Lyons, B. A., Montgomery, J. M., Guess, A. M., Nyhan, B., & Reifler, J. (2021). Overconfidence in news judgments is associated with false news susceptibility. *Proceedings of the National Academy of Sciences*, 118(23).
- Machete P., Turpin M. (2020). The use of critical thinking to identify fake news: a systematic literature review. In: M. Hattingh, M. Matthee, H. Smuts, I. Pappas, Y. Dwivedi, & M. Mäntymäki. (eds) *Responsible Design, Implementation and Use of Information and Communication Technology*. Springer, Cham. https://doi-10.1007/978-3-030-45002-1_20
- Maertens, R., Roozenbeek, J., Basol, M., & van der Linden, S. (2020). Long-term effectiveness of inoculation against misinformation: Three longitudinal experiments. *J Exp Psychol Appl*. doi:10.1037/xap0000315
- Mahmood, K. (2016). Do People Overestimate Their Information Literacy Skills? A Systematic Review of Empirical Evidence on the Dunning-Kruger Effect. *Communications in Information Literacy*, 10 (2), 199-213. <https://doi.org/10.15760/comminfolit.2016.10.2.24>
- Małosa, P. (2013). Advantages and disadvantages of digital education. *Biuletyn Edukacji Medialnej*, (2), 21-31. Available [here](#).
- Marsh, J., Plowman, L., Yamada-Rice, D., Bishop, J. C., Lahmar, J., Scott, F., et al. (2015). *Exploring Play and Creativity in Pre-Schoolers' Use of Apps: Final Project Report*. Available at: www.techandplay.org [accessed May 17, 2016].
- Martel, C., Pennycook, G., & Rand, D. G. (2020). Reliance on emotion promotes belief in fake news. *Cognitive research: principles and implications*, 5(1), 1-20.
- McCowan, T. (2006). The Foundations of Critical Questioning In Citizenship Education. *Currículo Sem Fronteiras*, 6(2), 196–210. https://www.academia.edu/28842673/The_Foundations_of_Critical_Questioning_In_Citizenship_Education
- McCowan, T. (2010). Can Schools Make Good Citizens? In R. Bailey (Ed.). *The Philosophy of Education: An Introduction* (pp. 86–98). London: Bloomsbury Academic. Retrieved January 13, 2022, from <http://dx.doi.org/10.5040/9781472541307.ch-007>
- McDougall, J., Zezulcova, M., van Driel, B., & Sternadel, D. (2018). *Teaching media literacy in Europe: Evidence of effective school practices in primary and secondary education. NESET II report*. Luxembourg: Publications Office of the European Union. doi: 10.2766/613204.
- McGrew, S. (2020). Learning to evaluate: An intervention in civic online reasoning. *Computers & Education*, 145, 103711. doi: <https://doi.org/10.1016/j.compedu.2019.103711>
- McGrew, S., & Byrne, V. L. (2020). Who Is behind this? Preparing high school students to evaluate online content. *Journal of Research on Technology in Education*, 1-19. doi:10.1080/15391523.2020.1795956
- McGrew, S., Breakstone, J., Ortega, T., Smith, M., & Wineburg, S. (2018). Can students evaluate online sources? Learning from assessments of civic online reasoning. *Theory & Research in Social Education*, 1-29.
- McGrew, S., Ortega, T., Breakstone, J., & Wineburg, S. (2017). The Challenge That's Bigger than Fake News:

- Civic Reasoning in a Social Media Environment. *American Educator*, 41(3), 4.
- McGrew, S., Smith, M., Breakstone, J., Ortega, T., & Wineburg, S. (2019). Improving university students' web savvy: An intervention study. 89(3), 485-500. doi:10.1111/bjep.12279
- McGuire, W. J. (1964). Some contemporary approaches. In L. Berkowitz (Ed.), *Advances in Experimental Social Psychology* (Vol. 1, pp. 191-229): Academic Press.
- McGuire, W. J. (1970). Vaccine for brainwash. *Psychology Today*, 3(9), 36-&.
- Mcnaughton, S., Zhu, T., Rosedale, N., Oldehaver, J., Jesson, R., & Greenleaf, C. (2019). Critical perspective taking: promoting and assessing online written argumentation for dialogic focus. *Studia paedagogica* vol. 24, n. 4, 2019
- Meisner, B. (2021). Are You OK, Boomer? Intensification of Ageism and Intergenerational Tensions on Social Media Amid COVID-19. *Leisure Sciences*, 43:1-2, 56-61, DOI: 10.1080/01490400.2020.1773983
- Moore, P. (2018). Teacher Training Curricula for Media and Information Literacy. Report of the International Expert Group Meeting, UNESCO House, Paris, 16-18 June 2008. Available at: http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/teacher_training_curricula_mil_meeting_june_2008_report_en.pdf.
- Mozur, P. (2018, 15 October). A Genocide Incited on Facebook, With Posts From Myanmar's Military. The New York Times. Available at: <https://www.nytimes.com/2018/10/15/technology/myanmar-facebook-genocide.html>
- Nicita, A. (2021). Il mercato delle verità - Come la disinformazione minaccia la democrazia. Bologna: Il Mulino.
- Nickerson, R. S. (1998). Confirmation bias: A ubiquitous phenomenon in many guises. *Review of General Psychology*, 2(2), 175–220. <https://doi.org/10.1037/1089-2680.2.2.175>
- Nussbaum, E. M., & Edwards, O. V. (2011). Critical questions and argument stratagems: A framework for enhancing and analyzing students' reasoning practices. *Journal of the Learning Sciences*, 20(3), 443-488.
- Nussbaum, M. (1997). Capabilities and Human Rights, 66 *Fordham L. Rev.* 273. Available at: <https://ir.lawnet.fordham.edu/flr/vol66/iss2/2>
- Nygren, T., & Guath, M. (2019). Swedish teenagers' difficulties and abilities to determine digital news credibility. *Nordicom review*, 40(1), 23-42.
- Nygren, T., & Guath, M. (2021a). Students evaluating and corroborating digital news. *Scandinavian Journal of Educational Research*, in press.
- Nygren, T., & Guath, M. (2021b). Students Evaluating and Corroborating Digital News. *Scandinavian Journal of Educational Research*, 1-17. doi:10.1080/00313831.2021.1897876
- Nygren, T., Guath, M., Axelsson, C.-A. W., & Frau-Meigs, D. (2021). Combatting Visual Fake News with a Professional Fact-Checking Tool in Education in France, Romania, Spain and Sweden. *Information*, 12(5), 201. Retrieved from <https://www.mdpi.com/2078-2489/12/5/201>
- Nygren, T., Haglund, J., Samuelsson, C. R., Af Geijerstam, Å., & Prytz, J. (2019). Critical thinking in national tests across four subjects in Swedish compulsory school. *Education Inquiry*, 10(1), 56-75. doi:10.1080/20004508.2018.1475200
- Nyhan, B. and Reifler, J. (2018) The roles of information deficits and identity threat in the prevalence of misperceptions. *J. Elect. Public Opin. Parties* 29, 222–244. Available at: <https://doi.org/10.1080/17457289.2018.1465061>

- OECD (2020). TALIS 2018 Results (Volume II): *Teachers and School Leaders as Valued Professionals*. TALIS, OECD Publishing, Paris, <https://doi.org/10.1787/19cf08df-en>.
- OECD (2021a), *21st-Century Readers: Developing Literacy Skills in a Digital World*, PISA, OECD Publishing, Paris, <https://doi.org/10.1787/a83d84cb-en>.
- OECD (2021b), *OECD Digital Education Outlook 2021: Pushing the Frontiers with Artificial Intelligence, Blockchain and Robots*, OECD Publishing, Paris, <https://doi.org/10.1787/589b283f-en>.
- OECD. (2015). *Students, Computers and Learning: Making the Connection*. OECD publishing.
- OECD. (n.d.). OECD ASSESSMENT RUBRIC. *Critical Thinking. Process & Product*. <https://www.oecd.org/education/class-friendly-assessment-rubric-critical-thinking.pdf>
- Opfer, V. D., & Pedder, D. (2011). Conceptualizing teacher professional learning. *Review of Educational Research*, 81(3), 376-407.
- Orhan, Y. E. (2021). The Relationship between Affective Polarisation and Democratic Backsliding: Comparative Evidence. Forthcoming in: *Democratisation*, 2021.
- Pan, B., Hembrooke, H., Joachims, T., Lorigo, L., Gay, G., & Granka, L. (2007). In Google we trust: Users' decisions on rank, position, and relevance. *Journal of computer-mediated communication*, 12(3), 801-823.
- Pangrazio, L. (2016). Reconceptualising critical digital literacy. *Discourse: Studies in the cultural politics of education*, 37(2), 163-174.
- Pangrazio, L., Godhe, A. L., and Ledesma, A. G. L. (2020). What is digital literacy? A comparative review of publications across three language contexts. *E-learning and Digital Media*, 17(6), 442-459
- Pantazi, M., Kissine, M. and Klein, O. (2018). The power of the truth bias: false information affects memory and judgment even in the absence of distraction. *Soc. Cogn.* 36, 167–198. Available at: <https://doi.org/10.1521/soco.2018.36.2.167>
- Paris, B., & Donovan, J. (2019). Deepfakes and cheap fakes: The manipulation of audio and visual evidence. *Data & Society*, 1-47.
- Pennycook, G. & Rand, D. (2021). Trends in Cognitive Sciences, Vol. 25, No. 5 <https://doi.org/10.1016/j.tics.2021.02.007>
- Pennycook, G., & Rand, D. G. (2018). Lazy, not biased: Susceptibility to partisan fake news is better explained by lack of reasoning than by motivated reasoning. *Cognition*. doi:<https://doi.org/10.1016/j.cognition.2018.06.011>
- Pennycook, G., Epstein, Z., Mosleh, M., Arechar, A. A., Eckles, D., & Rand, D. G. (2021). Shifting attention to accuracy can reduce misinformation online. *nature*, 592(7855), 590-595. doi:10.1038/s41586-021-03344-2
- Pereira, A., Harris, E. & Van Bavel, J. (2021). Identity concerns drive belief: The impact of partisan identity on the belief and dissemination of true and false news. *Group Processes & Intergroup Relations*. Online First. <https://doi.org/10.1177/13684302211030004>
- Punie, Y. & Brecko, B. (Eds.). (2013). *DIGCOMP: A Framework for Developing and Understanding Digital Competence in Europe*. Luxembourg: Publications Office of the European Union. <https://publications.jrc.ec.europa.eu/repository/handle/JRC83167>
- Punie, Y. & Redecker, C. (Eds.). (2017). *European Framework for the Digital Competence of Educators: DigCompEdu*. EUR 28775 EN. Publications Office of the European Union, Luxembourg. ISBN 978-92-79-73718-3 (print), 978-92-79-73494-6 (pdf), doi:10.2760/178382 (print), 10.2760/159770 (online), JRC107466.
- Repmán, J. J. J. o. E. C. R. (1993). Collaborative, computer-based learning: Cognitive and affective outcomes.

9(2), 149-163.

Roozenbeek, J. & van der Linden, S. (2021). Inoculation Theory and Misinformation. NATO Strategic Communications Centre of Excellence. 10. Retrieved from: <https://stratcomcoe.org/pdfjs/?file=/publications/download/Inoculation-theory-and-Misinformation-FINAL-digital-ISBN-ebbe8.pdf>.

Roozenbeek, J., & van der Linden, S. (2019). Fake news game confers psychological resistance against online misinformation. *Palgrave Communications*, 5(1), 1-10.

Roozenbeek, J., & van der Linden, S. (2020). Breaking Harmony Square: A game that “inoculates” against political misinformation. *The Harvard Kennedy School Misinformation Review*.

Roozenbeek, J., Maertens, R., McClanahan, W., & van der Linden, S. (2021). Disentangling Item and Testing Effects in Inoculation Research on Online Misinformation: Solomon Revisited. *Educational and Psychological Measurement*, 81(2), 340-362. doi:10.1177/0013164420940378

Roozenbeek, J., Schneider, C. R., Dryhurst, S., Kerr, J., Freeman, A. L., Recchia, G., . . . Van Der Linden, S. (2020). Susceptibility to misinformation about COVID-19 around the world. *Royal Society open science*, 7(10), 201199.

Roozenbeek, J., van der Linden, S., & Nygren, T. (2020). Prebunking interventions based on “inoculation” theory can reduce susceptibility to misinformation across cultures. *Harvard Kennedy School Misinformation Review*, 1(2).

Saleh, N. F., Roozenbeek, J. O. N., Makki, F. A., McClanahan, W. P., & Van Der Linden, S. (2021). Active inoculation boosts attitudinal resistance against extremist persuasion techniques: a novel approach towards the prevention of violent extremism. *Behavioural Public Policy*, 1-24. doi:10.1017/bpp.2020.60

Schleicher, A., von Reppert-Bismarck, J., (2020). Navigating Ambiguity during Coronavirus: Recommendations for Tackling the Infodemic. *OECD Forum*.

Schmidt, N. (2019). Facebook hat offenbar Mitglieder einer EU-Expertengruppe unter Druck gesetzt, die Desinformation bekämpfen sollten. *Buzzfeed.de*. <https://www.buzzfeed.de/recherchen/facebook-hat-offenbar-mitglieder-einer-eu-expertengruppe-unter-druck-gesetzt-die-desinformation-bekaempfen-sollten-90138108.html>

Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. New York: Basic Books.

Schuitema, J., Radstake, H., van de Pol, J., & Veugelers, W. J. E. S. (2018). Guiding classroom discussions for democratic citizenship education. *44*(4), 377-407.

Schwarz, N., & Jalbert, M. (2021). When news feels true: Intuitions of truth and the acceptance and correction of misinformation. In R. Greifeneder, M. Jaffé, E. J. Newman, & N. Schwarz (Eds.), *The psychology of fake news: Accepting, sharing, and correcting misinformation* (pp. 73–89). London: Routledge.

Share, J., Mamikonyan, T., & Lopez, T. (2019) *Critical Media Literacy in Teacher Education, Theory, and Practice*. Doi: <https://doi.org/10.1093/acrefore/9780190264093.013.1404>.

Shen, C., Kasra, M., Pan, W., Bassett, G. A., Malloch, Y., & O'Brien, J. F. (2018). Fake images: The effects of source, intermediary, and digital media literacy on contextual assessment of image credibility online. *New media & society*, 1461444818799526.

Schouwstra, M. (2016). *Social media interaction between teachers and pupils: Exploring opportunities and challenges in elementary school contexts* (Master's thesis, University of Twente).

Silva, K. (2020). Deepfake videos increasingly difficult to detect as people, computers struggle to keep up.

- ABC Radio Melbourne. Retrieved from: <https://www.abc.net.au/news/2020-09-24/humans-no-better-at-spotting-deepfakes-than-computers/12689440>.
- Singh, J., Grizzle, A., Yee, S. J., & Culver, S. H. (Eds.). (2015). *Media and Information Literacy for the Sustainable Development Goals*. International Clearinghouse on Children, Youth and Media. Nordicom. University of Gothenburg.
- Skolverket (2018). Curriculum for the compulsory school, preschool class and school-age educare (revised 2018). Available [here](#).
- Slooman, S. & Fernbach, P. (2017). *The knowledge illusion. Why we never think alone*. Riverhead books.
- Stalker, P., Livingstone, S., Kardefelt-Winther, D. and Saeed, M. (2019). *Growing up in a connected world*. UNICEF Office of Research – Innocenti, Florence. Accessed from: <https://www.unicef-irc.org/publications/pdf/GKO%20Summary%20Report.pdf>
- Steiner, E. D., & Woo, A. (2021). Job-Related Stress Threatens the Teacher Supply: Key Finding from the 2021 State of the US Teacher Survey. Technical Appendixes. Research Report. RR-A1108-1. *Rand Corporation*.
- Stephen, C., Stevenson, O., and Adey, C. (2013). *Young children engaging with technologies at home: the influence of family context*. *J. Early Child. Res.* 11, 149–164. doi: 10.1177/1476718X12466215
- Sternberg, R. J., Torff, B., & Grigorenko, E. L. (1998). Teaching triarchically improves school achievement. *Journal of educational psychology*, 90(3), 374.
- Suarez-Alvarez, J. (2021), "Are 15-year-olds prepared to deal with fake news and misinformation?", *PISA in Focus*, No. 113, OECD Publishing, Paris, <https://doi.org/10.1787/6ad5395e-en>.
- Superfine, A. C., Goldman, S. R. & Ko, M. - L. M. (Eds.) (2022). *Teacher Learning in Changing Contexts: Perspectives from the Learning Sciences*. Routledge.
- Swedish National Agency for Education (2021). Commentary material to the Curriculum for the Compulsory School. Skolverket: Stockholm. Available [in Swedish] [here](#).
- Terras, M. M. & Ramsay, J. (2016). *Family Digital Literacy Practises and Children's Mobile Phone Use*. *Front. Psychol.* 7:1957. doi: 10.3389/fpsyg.2016.01957
- Terras, M. M., Yousaf, F., and Ramsay, J. (2016). The relationship between Parent and Child Digital Technology use. In *Proceedings of the British Psychological Society Annual Conference*, Nottingham.
- Tomé, V., Branco, S., Nery, I. & Crespo, M. (Forthcoming). Portuguese Journalists training teachers in the new media education landscape during COVID-19. In Friesem, Y., Raman, U., Kanižaj, I., & Choi, G.Y. (Eds). (2022). *The Routledge handbook on media education futures post pandemic*. Routledge.
- Tucker, J. A., Guess, A., Barberá, P., Vaccari, C., Siegel, A., Sanovich, Stukal, D., and Nyhan, B. (2018). Social media, political polarization, and political disinformation: A review of the scientific literature. *Political polarization, and political disinformation: a review of the scientific literature* (March 19, 2018).
- Van Bavel, J. & Packer, D. (2021) *The power of us. Harnessing our shared identities for personal and collective success*. Wildfire.
- Van der Kolk, B. (2014). *The body keeps the score. Mind, brain and body in the transformation of trauma*. Viking Press.
- van der Linden, S. & Roozenbeek, J. & Compton, J. (2020). Inoculating Against Fake News About COVID-19, *Frontiers in Psychology*. Retrieved from: <https://www.frontiersin.org/articles/10.3389/fpsyg.2020.566790/full>.

- van der Linden, S., Roozenbeek, J., & Compton, J. (2020). Inoculating Against Fake News About COVID-19. *Frontiers in Psychology, 11*, 2928.
- Van Deursen, A. J., Helsper, E., Eynon, R., & Van Dijk, J. A. (2017). The compoundness and sequentiality of digital inequality. *International Journal of Communication, 11*, 452-473.
- van Dijk, J. (2020). *The digital divide*: John Wiley & Sons.
- von Reppert-Bismarck, J., Dombrowski, T., Prager, T., (2019). Tackling Disinformation Face to Face: Journalists' Findings in the classroom. *Lie Detectors*, available [here](#).
- von Reppert-Bismarck, J., Langenbein, M., Freegard, G., (2021). Building Resilience to Disinformation in a Digital Media Age. *Lie Detectors*, available [here](#).
- Voogt, J., Westbroek, H., Handelzalts, A., Walraven, A., McKenney, S., Pieters, J., & De Vries, B. (2011). Teacher learning in collaborative curriculum design. *Teaching and Teacher Education, 27*(8), 1235-1244.
- Vosoughi, S., Roy, D., Aral, S. (2018). The spread of true and false news online. *Science, 359*, 1146–1151. <https://doi.org/10.1126/science.aap9559>
- Walter N, Murphy ST (2018) How to unring the bell: a meta-analytic approach to correction of misinformation. *Commun Monogr 85*(3):423–441. <https://doi.org/10.1080/03637751.2018.1467564>
- Wardle, C., Derakshan, H. (2017). INFORMATION DISORDER: Toward an interdisciplinary framework for research and policy making. 5. Retrieved from [here](#).
- Waters, J. (2020, 10 December). Trusted news initiative to combat spread of harmful vaccine disinformation. Available [here](#).
- WHO - World Health Organization. (2021). 1st WHO infodemiology conference - How infodemics affect the world & how they can be managed. Available [here](#).
- Wikforss, Å. (2017). *Alternativa fakta. Om kunskapen och dess fiender* [Alternative facts: On Knowledge and Its Enemies]. Stockholm: Fri Tanke Förlag.
- Wilson, C. Alton, G. Ramon, T., Kwame A., and Chi K. C. 2014. *Media and Information Literacy Curriculum for Teachers*. UNESCO. Available [here](#).
- Wineburg, S, Breakstone, J., McGrew, S., Smith, M., and Ortega, T. (2022) Lateral Reading on the Open Internet: A District-Wide Field Study in High School Government Classes *Journal of Educational Psychology* (Accepted for publication)
- Wineburg, S., & McGrew, S. (2019). Lateral Reading and the Nature of Expertise: Reading Less and Learning More When Evaluating Digital Information. *Teachers college record, 121*(11), 1-40.
- Wolf, M. (2018). *Reader Come Home: The Reading Brain in a Digital World*. New York: HarperCollins, 2018. 11 Translations. ISBN 9780062388780. OCLC 1047603037.
- Wood, T., & Porter, E. (2019). The Elusive Backfire Effect: Mass Attitudes' Steadfast Factual Adherence. *Political Behavior, 41*(1), 135-163. doi:10.1007/s11109-018-9443-y
- Wunderlich, Leonie & Hölig, Sascha (2022). *Synopse zur Studienlage zur Nachrichtennutzung und Nachrichtenkompetenz Jugendlicher und junger Erwachsener in Deutschland*. Leibniz-Institut für Medienforschung | Hans-Bredow-Institut (HBI): Hamburg. Available [here](#).
- Yu, Z., Jin, D., Zhai, C., Ni, W. & Wang, D. (2021). Internet of Vehicles Empowered Mobile Media: Research on Mobile-Generated Content (MoGC) for Intelligent Connected Vehicles. *Sustainability, 4*. <https://doi.org/10.3390/su13063538>. Retrieved from [here](#).
- Zuboff, S. (2022). The EU has fired the starting gun in the fightback against Big Tech. *Financial Times*

10. Appendices

10.1. Appendix 1: List of Members of the Expert Group

1. Ahmet Murat Kılıç, Programme Manager, Council of Europe
2. Alina Bargaoanu, Professor, National University of Political Studies and Public Administration
3. Arminas Varanauskas, Executive Director, Knowledge Economy Forum.
4. Cassie Hague, Analyst, the Organisation for Economic Co-operation and Development (OECD)
5. Charo Sádaba, Professor and Researcher, University of Navarra-Iberifier
6. Claus Hjorth, Head of department, Media Council / Danish Film Institute
7. Divina Frau-Meigs, President, Savoir Devenir
8. Eleni Kyza, Associate Professor in Information Society with the Department of Communication and Internet Studies at the Cyprus University of Technology
9. Gabriella Thinsz, Head of Pedagogy and Development, Swedish Educational Broadcasting Company (UR)
10. Giacomo Mazzone, former RAI deputy director of the news
11. Irene Andriopoulou, Head of Research, Studies & Educational Programs Department, EKOME - National Centre of Audiovisual Media & Communication.
12. Jens Vermeersch, Internationalisation policy coordinator, GO!.
13. Johanna Boersch-Supan, Managing Director, Vodafone Germany Foundation, and Digital Education Research Lead, Vodafone Foundation UK.
14. Juliane von Reppert-Bismarck, Executive Directors and Founder, Lie Detectors ASBL.
15. Kamil Mikulski, Senior Hybrid Threats Analyst, The Kosciuszko Institute Association.
16. Kari Kivinen, Education outreach expert, EUIPO.
17. Onno Hansen-Staszyński, Chairman of EZZEV foundation and co-author of education reform
18. Norman Rohner, Policy Officer, ALL DIGITAL AISBL
19. Sally Reynolds, Media & Learning Association
20. Sandra Troia, Teacher and member of national working group for the implementation of the Digital School Plan by the Italian Ministry of Education
21. Thomas Nygren, Professor, Uppsala university
22. Veni Markovski, in personal capacity
23. Vitor Tomé, Assistant Professor/Researcher, Autonomia University of Lisbon / CIES-ISCTE-Instituto Universitário de Lisboa

10.2. Appendix 2: Existing frameworks and initiatives

European Commission

- [Action Plan on Disinformation.](#)

- [Code of Practice on Disinformation](#) (since 2018): Representatives of online platforms, leading social networks, advertisers and advertising industry agreed on a self-regulatory Code of Practice to address the spread of online disinformation and fake news. The European Education Summit is the annual flagship event of the European Education Area, the EU's shared vision of a modern and inclusive European education and training sector, fit to face the digital and green transitions.
- [Digital Education Action Plan 2021-2027: Resetting education and training for the digital age.](#)
- [Disinformation teachers toolkit](#) (2021-ongoing).
- [European Education Summit](#): The Next Decade of European Education (9 December 2021). The European Education Summit is the annual flagship event of the European Education Area, the EU's shared vision of a modern and inclusive European education and training sector, fit to face the digital and green transitions.
- [eTwinning annual theme: Media literacy and addressing disinformation](#) (2021)
- [EUvsDisinfo](#) is the flagship project of the European External Action Service's East StratCom Task Force. It was established in 2015 to better forecast, address, and respond to the Russian Federation's ongoing disinformation campaigns affecting the European Union, its Member States and countries in the shared neighbourhood.
- [High-level expert group on media literacy](#) (2011-ongoing).
- [Media Literacy Awards](#): Annual awards on media literacy projects that stand out with originality and innovation, impact and scalability and clarity of their presentation.
- [Media Literacy Week](#) (annually): The European Media Literacy Week is an initiative to underline the societal importance of media literacy and promote media literacy initiatives and projects across the EU.
- [Preparatory actions on Media Literacy](#) (since 2016).
- [Safer Internet Centres](#); [Safer Internet Day](#); [Better Internet for Kids](#): Safer Internet Centres are the European network, which informs, advises and assists children, parents, teachers and carers on digital questions and fights against online child sexual abuse. Exchange through the Better Internet for Kids platform.
- [European Council conclusions of May 2016](#) on developing digital literacy and critical thinking through education and training noted that education and training should provide learners with the competences and values required 'to access, interpret, produce and use information and other media content, notably in the context of the internet and social media, in a safe and responsible manner.' The Council directly invited Member States to pay sufficient attention to 'developing digital literacy and critical thinking in education and training at all levels, including through citizenship and media education.'
- [The European Council Recommendation of May 2018](#) on common values, inclusive education, and the European Dimension of Teaching invites Member States to strengthen social cohesion to fight the rise of populism, xenophobia, radicalisation, divisive nationalism and the spreading of fake news, notably by continuing to implement the commitments of the Paris Declaration on enhancement of critical thinking and digital literacy.
- [The European Digital Competence Framework for Citizens](#) (DigComp) provides a common point

of reference for being ‘digitally competent.’ Overall, there are 21 digital competences arranged into five areas within the framework, spanning across information and data literacy, communication and collaboration, digital content creation, safety and problem solving.

- [The European Framework for the Digital Competence of Educators \(DigCompEdu\)](#) is a scientifically sound framework describing what it means for educators to be digitally competent. It provides a general reference frame to support the development of educator-specific digital competences in Europe. DigCompEdu is directed towards educators at all levels of education, from early childhood to higher and adult education, including general and vocational education and training, special needs education, and non-formal learning contexts.
- Taking action towards the future, the Commission’s updated [Digital Education Action Plan \(2021-2027\)](#) emphasises that ‘Digital literacy is essential for life in a digitalised world’ and that ‘[...] it is important to educate people at all ages about the impact of digital technology on well-being and the way technology systems work’.⁷⁰ Regarding disinformation, the updated Action Plan further notes that ‘Education should more actively help learners to develop the ability to critically approach, filter and assess information, notably to identify disinformation and to manage overload of information as well as develop financial literacy.’

EU-wide (in several Member States)

- [adT](#) is a Polish-Dutch (PL, NL) teacher training program linking media education and prophylactics. The program is an initiative by the Polish Citizen Project foundation and the Dutch Ezzev foundation. In the program teachers acquire skills to promote critical thinking among students while engaging with them in an open and tolerant communication.
- [Facts4All- Schools tackling disinformation](#): European Schoolnet has published an online MOOC to foster critical thinking and tackle online disinformation through intergenerational collaboration and community engagement. The course has four modules, and it is targeted at primary and secondary school teachers of any subject.
- [ALL DIGITAL](#) hosts two Communities of Practice (CoP): DigComp CoP and Certification CoP. By joining, education stakeholders have the opportunity to raise the issues that concern them, voice their opinion in discussions, participate in working groups, exchange materials and experience, access good practices, learn from peers, share resources and be informed about the latest developments concerning the CoP topic. Communities of Practice are open to everyone, individuals and organisations alike.
- [Bad News](#): Prebunking with games across national and cultural borders. Online intervention with significant impact.
- [‘Check or Cheat’](#) is a collection of educational material for secondary education students and teachers to learn how to critically evaluate media content, fact check and build resilience to false information.
- [CrAL: Creative Audiovisual Lab](#) for the promotion of critical thinking and media literacy. The

⁷⁰ European Commission. Digital Education Action Plan (2021-2027) Resetting education and training for the digital age. 2021. https://ec.europa.eu/education/education-in-the-eu/digital-education-action-plan_e

aim of the project is to enhance critical thinking and media literacy among young people between 14-19 years old, parents, and educational staff. This will contribute to provide young people with the tools they need to understand the world they live in, stimulate their critical thinking and sense of responsibility and help them realise the power of their voice.

- [Creating online intervision spaces](#). An ongoing project, partially implemented within the framework of Erasmus+, the target group being those who feel a distance towards society and/or the labour market.
- [Disinfo Lab](#): EU DisinfoLab is an independent non-profit organisation focused on tackling sophisticated disinformation campaigns targeting the EU, its member states, core institutions and core values.
- [Escape rooms: a new format for the teaching and learning community?](#) This webinar made available by Media and Learning explores alternative formats for learning about and developing resistance to misinformation. The goal is to create an active learning environment around misinformation using the experiential format of an escape room, with particular attention to the emotional and psychological dimensions of misinformation and areas that are often missing from other misinformation educational programs. The research team uses co-design methods with future plans to develop other escape rooms tailored to the needs and interests of particular communities.
- [Outline and trial an infrastructure dedicated to the implementation of child rights and protection mechanisms in the online domain](#). The objective of the proposed pilot project is to demonstrate an interoperable technical infrastructure dedicated to the implementation of child protection mechanisms (such as age verification) and parental consent mechanisms based on relevant EU legislation such as the Audiovisual Media Services Directive (AVMSD) and General Data Protection Regulation (GDPR).
- [Practices collected by the RAN network](#) (EU): More than 200 inspiring practices are included in the RAN Collection, which is a convincing testimony to the progress that is being made in the field preventing and countering violent extremism (P/CVE). It is continually expanding to include more practices with the aim of providing a valuable source of information and inspiration for practitioners, policymakers and researchers.
- [SMILES Young people fighting disinformation](#) (EU): SMILES is a media literacy project that is all about helping young people learn how to combat fake information. SMILES brings together partners in the Netherlands, Spain and Belgium who work in libraries, media literacy organisations and research institutes to develop and test an innovative approach to combating the spread of disinformation.
- [ThinkTech seminars](#): The objective of the seminars is to make students more aware, at a personal and professional level, of the role that technology plays in our societies and our lives.
- [YouCheck!](#): Debunking with professional verification tools. Classroom intervention with digital tools with significant impact across four European countries. An experimental project that consisted in testing the visual verification plug-in InVID-WeVerify (developed for journalists) among students. The classroom intervention showed that media literacy can increase students' performance in detecting misinformation and that it can change behaviour and develop critical

thinking.

Member State level

- ‘Co-Creating Media Literate Youth’ (ongoing, CY): The Cyprus Youth Council is organising 10 online workshops on media literacy between December 2020 – January 2021, open to youth and the general public with subjects related to misinformation and fake news. The project aims to draft a toolkit to address misinformation and promote verification tools (February 2021) as well as to draft a Policy Paper (March 2021), which will be promoted to decision-making structures of Cyprus.
- [Antibodies to Digital MisInformation](#) (ongoing, CY): The main goal is to develop the metacognitive attitude and skill of adolescent students of critically coping with information in digital media.
- [Big little screens](#) by NGO Art Hive (LT): Similar approach to ‘Art of Curiosity’ through working with minority and Lithuanian schools but in this particular case they are using different types of media for collaborative projects and critical thinking.
- [CLEMI](#) Media and Information Literacy Brochure (FR) including a focus on, for example, freedom of expression and its experimentation in the classroom,
- [Coding for tomorrow](#) (DE): The Vodafone Germany Foundation teamed up with journalists to create self-learning modules for students as well as lesson plans for teachers on how to detect disinformation; the functioning of algorithms and social media platforms; as well as the production of video content, podcasts or Instagram stories following journalistic standards. The material is ready- and easy-to-use at home or for the classroom and aims to create a learning experience by doing. Interested teachers can also take part in training sessions regarding the above topics.
- ‘[Die Verfassungsschüler](#)’ (The constitutional students) (DE): Together with the NGO Teach First and the Federal Interior Ministry, the Vodafone Germany Foundation has just launched the project ‘Die Verfassungsschüler’ (The constitutional students). This project focuses on youth from disadvantaged backgrounds and/or with low educational attainment levels as this is the target group with the highest risk of being affected by disinformation. The programme takes a holistic approach and offers the students one year of hands-on excursions and projects surrounding fundamental constitutional rights. It aims to create a deep understanding of the meaning of citizenship in a digitised society, and by giving students the opportunity to be actively involved in projects it allows them to experience and learn to be an engaged citizen. The program includes an encompassing module on the freedom press, the freedom of expression as well as formation of opinion in a digital public (No link available yet, but can be provided at a later stage).
- [Digital Citizenship Academy](#) (2019-2022) (PT) is a community-based project focused on Preschool and Primary School children, financed by Fundação Calouste Gulbenkian. DCA is the third phase of a longitudinal project focused on democratic participation and media literacy that started in 2015 in the Lisbon area. It includes teacher training, regular monitoring, a school

newspaper, a website, and a YouTube channel.

- [Educational games](#) (PL): These games covered digital literacy, communication, and emotions and health. The games were augmented reality-based.
- [Faktana, kiitos!](#) (ongoing, FIN): Finnish project that brings journalists to schools to teach media literacy.
- [LEME - Literacia e Educação Mediática em Linha](#) (PT): Website launched on September 8 2021, developed by a working group nominated by the Portuguese Ministry of Education and the Secretary of State of Cinema, Audiovisual and Media, which makes available media literacy resources for educators (preschool to secondary).
- [Media and Information Literacy \(RO\)](#), 2021: The Center for Independent Journalism and UNICEF, in partnership for the media and information literacy of children and adolescents in Romania, students, teachers, but also those who are preparing for a career in teaching, are discovering how to fight the phenomenon of online and offline disinformation.
- [Media Literacy and Journalism](#) (PT) is a project through which professional journalists are training K-12 teachers in Media Literacy and Journalism nationwide, led by the Portuguese Journalists Union, in partnership with the ministries of Education and Culture. The journalists are currently monitoring the projects teachers developed during the training courses.
- [Media Literacy Coalition](#) (ongoing, BG): The Coalition works to integrate media literacy fully into the educational process and to increase media literacy in society.
- [Médiatropismes](#) (FR) is an audiovisual series of media and information education intended for secondary school students. Topics include hate speech, digital traces, freedom of speech and internet geopolitics.
- [Press and Media Week at School](#) (ongoing, FR): Teachers and journalists educating young people.
- [Social experiments on offline exposure](#) (NL): In cooperation with a Dutch national radio broadcaster, social experiments were carried out involving child identity and digital communication. The most revealing experiment that involved children communicating online-only for 24 hours, avoiding verbal and nonverbal contact in real-life showed that children did not want to emigrate to an existence online-only.
- [Teacher training activities on Fake news and Covid19 in line with the DigComp model](#) (IT): Free of charge for teachers, this webinar was provided to equip teachers with the tools to combat disinformation in view of the COVID-19 pandemic.
- [The Croatian Safer Internet Centre](#) (ongoing) prepares educational packs for schools and organisations.
- [The Dutch Media Literacy Network](#) (Netwerk Mediawijsheid, NL) is an expertise centre that links the activities of various organisations in the area of media literacy and promotes cooperation between them. There are five organisations at the Network's core: Netherlands Institute for Sound and Vision, NIBG; ECP, an information society platform; Koninklijke Bibliotheek National Library of the Netherlands Institute for the Public Libraries Sector; Kennisnet, an expertise centre for ICT in education; and NPO, a Public Broadcasting Company.

- [The Media Council for Children and Young People](#) (DK) has been set up by the Danish Ministry of Culture to function as a knowledge centre that informs and advises children and young people on their use of digital media, including digital security, well-being, competencies and rights. The work is carried out in collaboration with educators, parents, authorities, organisations, children and young people.
- [The Safer Internet Centre](#) (BG) is a holistic model for systematic building of digital and media literacy skills at school from first to last grade. The model is based on the European reference frameworks for digital competence and life-long learning. It makes it possible for teachers in one school to use the presented teaching methodology during classes in all subjects. To this end the school prepares a common vision, teachers act more as facilitators and pupils are taking active part in the learning process with the use of various interactive methods. A handbook has been issued [here](#).
- [Tjekdet Fact Checking](#) (DK): A Danish independent fact checking media that checks claims in public debate, and makes corrections and adds nuance where needed.

Examples of Erasmus+ Projects

- [Building health literacy around pregnancy, birth and early life](#) (2017-2020): Development of an APP on related health issues.
- [Digital Cultural Literacy as a Means for Integrating New European Citizens](#) (2017-2020): Digitalisation and sharing of culture.
- [Digital Skills Pathways for Youth across Europe](#) (2015-2017): Digital Pathways Programme for teenagers.
- [Head in the Clouds: Digital Learning to Overcome School Failure](#) (2015-2018): Digital education for minorities, especially Roma.
- [Keep Calm and Innovation](#) (2018-2019): Learning EN through digital tools.
- [MeLDE](#) (2018-2020): The project aims to develop relevant and high-quality skills and competences and to open education and innovative practices in the digital era. This will be accomplished by offering open and free access to the tools to be developed both for participation in the MeLDE programme and for online assessment and validation of the skills acquired.
- [Numeracy@English](#) (2015-2018): Broadening numeracy and digital skills.
- [Open your eyes](#) (2018-2020): The project targets specifically adult learners and educators and seeks to improve their digital skills by providing them with tools to identify fake news and fight the spread of disinformation online.
- [Quality of youth career guidance and nowadays media literacy](#) (2014-2016): Improve media literacy skills of guidance counsellors.
- [See, Tell and Listen: Improving Refugees' Digital Literacy through Photovoice and Storytelling](#) (2018-2020): Upskilling and reskilling through digital tools.
- [SocialTruth Project](#) (2019-2021): Easy access to the capabilities of novel data-driven services such as fake news detection, based on AI technology, and content verification trust and integrity based on blockchain technology. It will establish an open ecosystem where both professionals

(i.e. journalists) and individuals (e.g. average social media users) can access to detect fake news. As a result, SocialTruth expects to increase the level of trust in social media, by improving systems of verification for content and authors credibility and methodologies for the detection of fake news.

International

- [Addressing conspiracy theories: what teachers need to know](#), UNESCO
- [Campaign dealing with propaganda, misinformation and fake news](#) (Council of Europe)
- [Challenge Based Learning](#) (international): The Challenge Based Learning (CBL) framework is collaborative and hands-on, asking all participants (students, teachers, families, and community members) to identify Big Ideas, ask good questions, identify and solve challenges, gain in-depth subject area knowledge, develop 21st-century skills, and share their thoughts with the world.
- [Checkology](#) (International) - The News Literacy Project: Checkology's lessons and other resources show how to navigate today's challenging information landscape. Users learn how to identify credible information, seek out reliable sources and apply critical thinking skills to separate fact-based content from falsehoods.
- [Digital Citizenship Education](#) (Council of Europe): Launched in 2016, the aim of this project is to contribute to reshaping the role that education plays in enabling all children to acquire the competences they need as digital citizens to participate actively and responsibly in democratic society, whether offline or online.
- [Digital Citizenship Education Days](#) (Council of Europe): On November 3-4 the Council of Europe organised a videoconference entitled 'Digital Citizenship Education Days' in conjunction with the Etats généraux du numérique pour l'éducation organised by the French Ministry of National Education, Youth and Sports.
- [Digital resistance handbook for teachers](#) (Council of Europe): Handbook for teachers on how to support their students to recognise fake news and false information found in the online environment.
- [eSafety Commissioner](#) (AUS) Parent guide to mental health: Webinar to help young people develop strategies for their mental health while they are online.
- [Factitious](#) (USA) is a game intended to help players learn how to identify fake news stories. The game shows actual news articles, without revealing their publication source until the player clicks to see it.
- [Global Media and Information Literacy Week 2021](#) (UNESCO): The annual Global Media and Information Literacy (MIL) Week, initiated in 2012, is led by UNESCO in cooperation with the UNESCO MIL Alliance, the UNESCO-UNAOC MIL and Intercultural Dialogue (MILID) University Network, and other partners. It is a major occasion for stakeholders to review and celebrate the progress achieved towards 'Media and Information Literacy for All.'
- [iThrive Games](#) (USA) offers video game-based curriculum development. They are developing support material for teachers to fully integrate various video games in the classroom in order to teach 21st century skills.

- [MIL CLICKS Social Media Initiative](#) (hosted annually), UNESCO.
- [Media and Information Literacy \(UNESCO\)](#): Media and Information Literacy Week and related initiatives, including curriculum for teachers and learners.
- [MediaWise for Gen Z](#) by Poynter institute (USA) focuses on student agency and empowering young people to take a leading role in educating other young people in those ways they see most fit.
- [MILON](#) (MENA-region): A trilingual platform on digital literacy in the MENA-region that targets young people and educators. The aim was to promote media literacy with educational short videos filmed in the region as well as offering pedagogical material for educators.
- [News Literacy Project](#) (International): News Literacy Project provides programs and resources for educators and the public to teach, learn and share the abilities needed to be smart, active consumers of news and information, and equal and engaged participants in a democracy.
- [OECD Assessment rubrics](#) for critical thinking (largely to be used in formative feedback).
- [RFCDC - Learning activities based on the COVID-19 pandemic](#) (Council of Europe): The Council of Europe has developed a set of learning activities that may be used in primary and secondary education, all of which are based directly on the disinformation challenges raised by the COVID-19 pandemic.
- [The Centre for Educational Research and Innovation \(CERI\)](#) (OECD) works with teachers across primary, secondary and tertiary levels of education to develop pedagogical approaches to supporting students' subject-specific creativity and critical thinking.
- [The world UNPLUGGED](#) (International): This activity requires asking a group (a classroom/a group of students) to avoid all screens, connections and media activity for 24 hours. After that, follows a guided discussion about how they have felt during that time, how dependent they are from technology, and positive and negative outcomes after being disconnected.
- [Whatthefake](#) (CH): A game teaching how to identify fake news.

10.3. Appendix 3: Links to existing guidelines and curriculum examples

European Commission

- [Spot and fight disinformation](#): With this toolkit, teachers in secondary school can teach their students to distinguish what is real from what is fake when they are browsing online. The toolkit includes an editable presentation (which includes real-life examples and group exercises) and an instruction booklet for teachers.

EU-wide (in several Member States)

- [The Euroguide Handbook](#) aims to offer teachers and social workers practical tools to respond to socio-political or religious arguments in order to prevent radicalisation in the school

environment. Guidance is offered on how to create resilient environments and safe spaces where vulnerable young people can open up, sharpen their social and emotional skills, and improve their self-esteem.

- [Resources – Check or Cheat](#), EU project.
- The initiative [Get Your Facts Straight](#) (by ALL DIGITAL) offers a 10-hour media literacy training course on disinformation on social media for 14–16-year-olds as well as their parents and grandparents. The course focuses on what disinformation is, why it is vastly present on social media, and how to recognise and respond to disinformation. The course can be implemented both in schools, as well as in non-formal educational settings such as youth clubs, libraries and NGOs.

Member State level

- [Curriculum for the compulsory school, preschool class and school-age educate](#) (SE): Among other relevant guidelines, the curriculum states that: ‘Pupils should be given opportunities to look for answers by using different types of sources. In this way, teaching should contribute to pupils developing their critical thinking over their own results, the arguments of others and different sources of information.’
- [EDUSCOL French education ministry portal](#) (FR): A set of tools and resources on media and information education, emphasising the ability of students to analyse information, question the sources, and how to respond to conspiracy theories as a teacher. Available for primary and secondary schools.
- [Guidelines by Aristotle University of Thessaloniki, Journalism and Mass Media Faculty](#) (EL)
- [Guidelines for media and information literacy](#), French Ministry of Education, 2016 (FR)
- [Information literacy guide for teachers and students](#) (FI): The guide includes information adapted for school use, group work assignments, and reading and linking tips. Fact Bar EDU teaching materials are designed to be used in schools as part of the curriculum or in adult education in support of lifelong learning.
- [Lehren und Lernen in der Digitalen Welt \(Teaching and Learning in the Digital World\)](#) (Ministerium für Schule und Bildung des Landes Nordrhein-Westfalen, DE)
- A four-year high school curriculum subject, [Modern Media](#), addresses the promotion of digital literacy and tackling disinformation (PL). The subject is framed as ‘what a responsible journalist should know’ and covers digital literacy in its widest sense: from identity to communication and self-presentation, from the impact of digital media to data literacy. The pedagogy of the subject is based on the teacher training program ([adT](#)).
- [News literacy Playbook](#), News literacy project (FI)

International

- [A Global Framework of Reference on Digital Literacy Skills for Indicator 4.4.2](#) (2018), UNESCO: The objective of the Digital Literacy Global Framework (DLGF) project is to develop a methodology that can serve as the foundation for Sustainable Development Goal (SDG)

thematic Indicator 4.4.2: ‘Percentage of youth/adults who have achieved at least a minimum level of proficiency in digital literacy skills.’ To achieve this objective, the European Commission’s Digital Competence Framework for Citizens (DigComp 2.0) has been integrated as the initial framework and four empirical studies to develop the proposed framework were conducted.

- [Digital citizenship education - Trainers' Pack \(2020\)](#), Council of Europe: In 2016, the Steering Committee for Educational Policy and Practice of the Council of Europe launched a new intergovernmental project, Digital Citizenship Education. The aim of the project is to help reshape the role education plays in enabling children and young people to acquire the competences they need to participate actively and responsibly in democratic society as digital citizens, both online and offline. This present publication is the work of the members of the Digital Citizenship Education expert group.
- [Digital literacy framework for Canadian Schools](#) (Canada) focuses on the three main principles – ‘use’, ‘understand’ and ‘create’. These guidelines provide a road map for teaching digital literacy skills in Canadian schools. The framework draws on seven key aspects of digital literacy – ethics and empathy, privacy and security, community engagement, digital health, consumer awareness, finding and verifying, and making and remixing. The framework provides teachers with supporting lessons and interactive resources that are linked to curriculum outcomes for every province and territory.
- [Guidelines for industry on online child protection](#) (International): The Child Online Protection (COP) Initiative is a multi-stakeholder network launched by the International Telecommunication Union (ITU) to promote awareness of child safety in the online world.
- [Media and Information Literate Citizens: Think Critically, Click Wisely!](#), UNESCO Model Media and Information Literacy Curriculum for Educators and Learners
- [New handbook for journalism education and training published to fight ‘fake news’ and disinformation](#) (UNESCO), (2018)
- [Teaching and Learning with Twitter](#) (Twitter) (2019)
- [The Digital citizenship Education Handbook](#) (2019), Council of Europe: The Digital citizenship education handbook is intended for teachers and parents, education decision-makers and platform providers alike. It describes in depth the multiple dimensions that make up each of 10 digital citizenship domains, and includes a fact sheet on each domain providing ideas, good practice and further references to support educators in building the competences that will stand children in good stead when they are confronted with the challenges of tomorrow’s digital world.

10.4. Appendix 4: Key research and resources (e.g. reports, scientific articles, etc.)

- [Are Telegram and Signal Havens for Right-Wing Extremists?](#) Foreign Policy, March 2021.
- Cardoso, G., Martinho, A., Narciso, I., Moreno, J., Crespo, M., Palma, N. and Sepúlveda, R. (2020). Information and Misinformation on the coronavirus in Portugal. Lisbon: CIES-ISCTE. Instituto Universitário de Lisboa. Available [here](#).

- [Citizenship education in the digital era Ministerial Declaration](#), 26 November 2019 (Council of Europe). Available [here](#).
- [Educating 21st Century Children: Emotional Well-being in the Digital Age](#) (OECD), 2019. Available [here](#).
- [Frequently Asked Questions \(FAQs\)](#) by European Union intellectual property office (EUIPO) helps teachers and students in the EU to find information on using copyright protected content in the context of education and training, particularly online. It also informs teachers and students on the opportunities copyright protection can have for them as potential creators of works within the context of education. Answers to the FAQs are given for all EU Member States. They are available in English and/or at least one official language of each respective Member State.
- Journalism & Disinformation: a UNESCO handbook with Fondation Hironnelle, 2020. Available [here](#).
- Heath, C. (2021). Annotated Bibliography for Online Misinformation. Ontario: Evidence for Democracy. Available [here](#).
- Hobbs, R. (2010). Digital and Media Literacy: A Plan of Action. A White Paper on the Digital and Media Literacy Recommendations of the Knight Commission on the Information Needs of Communities in a Democracy. Aspen Institute. 1 Dupont Circle NW Suite 700, Washington, DC 20036. Available [here](#).
- [Improving Media Literacy campaigns on disinformation \(ERGA Report\)](#), 2021. Available [here](#).
- [Mapping of media literacy practices and actions in EU-28 \(Council of Europe\)](#), 2016. Available [here](#).
- Mihailidis, P. (2014). Media literacy and the emerging citizen: Youth, engagement and participation in digital culture. Peter Lang. Available [here](#).
- Piscitelli, A., & Ferrés, J. (2012). La competencia mediática: propuesta articulada de dimensiones e indicadores= Media Competence: Articulated Proposal of Dimensions and Indicators. La competencia mediática: propuesta articulada de dimensiones e indicadores= Media Competence: Articulated Proposal of Dimensions and Indicators, 1-15. Available [here](#).
- Onno Hansen-Staszyński, 24 uur lang alleen maar mogen chatten: zo reageren jongeren ('youngsters online only for 24h'), 2017 Available [here](#).
- Panagiotou, N., & Theodosiadou, S., (2104). News Literacy: Learning about the World. The Journal of Digital and Media Literacy (ISSN 2326-1862). Available [here](#).
- [Recommendation of the Committee of Ministers to Member States on developing and promoting digital citizenship education](#), 21 November 2019 (Council of Europe). Available [here](#).
- [RESIST Counter Disinformation Toolkit \(UK\)](#): This toolkit will help support the dissemination of reliable, truthful information that underpins our democracy. RESIST stands for Recognise disinformation, Early warning, Situational Insight, Impact analysis, Strategic communication, Track outcomes.
- [Study on supporting quality journalism through media and information literacy](#), 2020 (Council of Europe): Report underlining the importance of developing information and media literacy skills in a lifelong learning perspective. Available [here](#).

- Teaching material '[Understanding fake news in historical context](#)' (DK)
- [The Debunking Handbook 2020](#). Center For Climate Change Communication, George Mason University.
- [The European MediaCoach Initiative](#) (EU) contributed by training media literacy educators across Europe; the process of this initiative is described with details in the book 'Media Coach- How to become a media literacy coach.' The book provides specific information about the project results and achievements. In the chapters of this book, readers can find information on the three-year-long experience in forming 100 media literacy coaches in each of the following countries: Bulgaria, Cyprus, Greece, Portugal and Romania. Through the book, the partners report on the different experiences of replicating the excellent practice that was first established in the Netherlands by the Nationale Academie Voor Media.
- Vincent-Lancrin, S., et al. (2019), Fostering Students' Creativity and Critical Thinking: What it Means in School, Educational Research and Innovation, OECD Publishing, Paris, Available [here](#).
- Vodafone Germany Foundation (2021), Souverän im Netz, Zwölf Empfehlungen, wie wir (nicht nur) junge Menschen gegen digitale Desinformation und Hassrede stärken können (German). Available [here](#).
- Frau-Meigs et al, Handbook on Media Education Research, Wiley 2020. Available [here](#).

