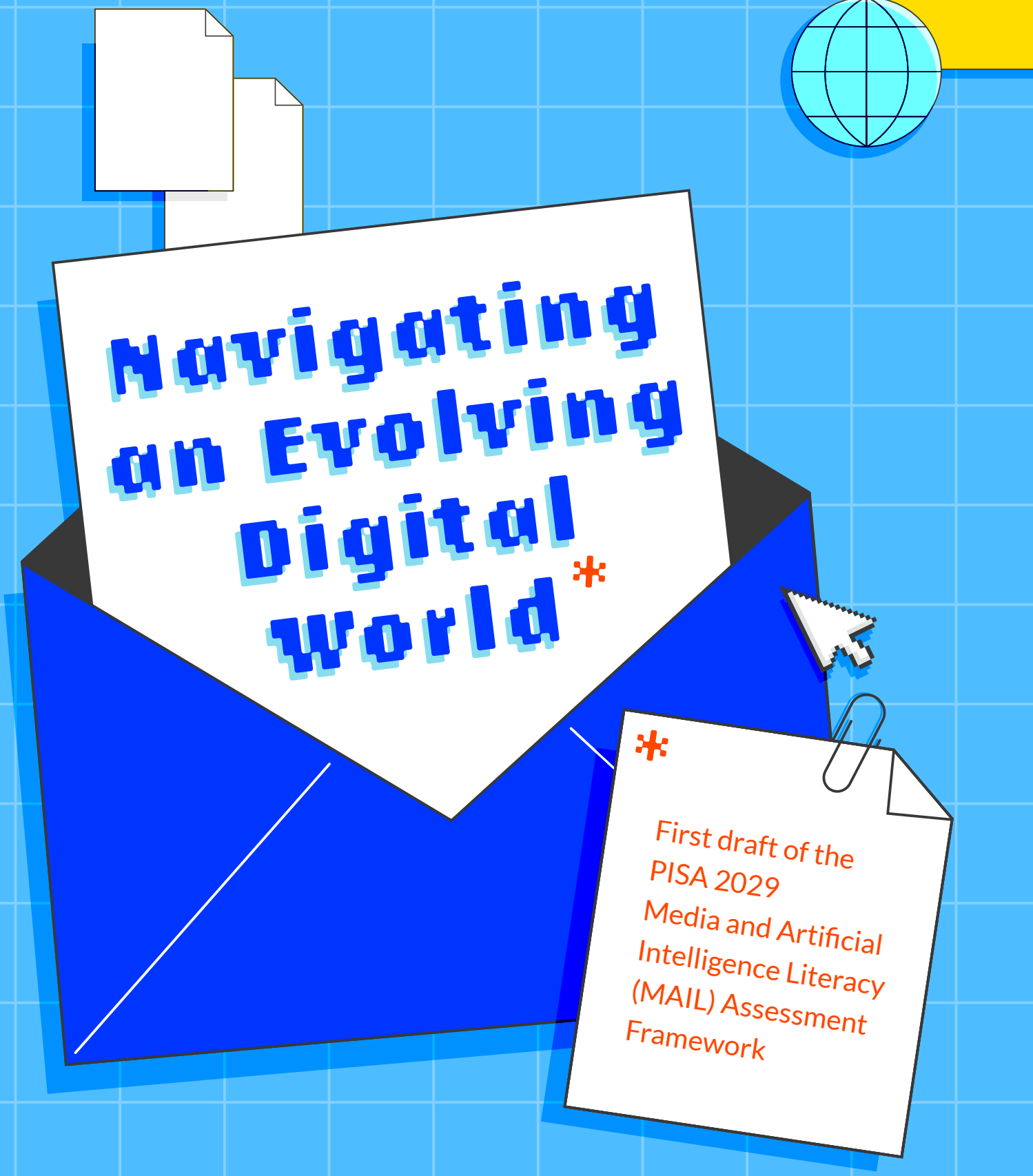

Navigating an Evolving Digital World*

* First draft of the PISA 2029 Media and Artificial Intelligence Literacy (MAIL) Assessment Framework

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Acknowledgments

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Note to the Reader

The following document is a preliminary draft.

The PISA 2029 Media and Artificial Intelligence Literacy (MAIL) will be subject to revisions before the final version is released.

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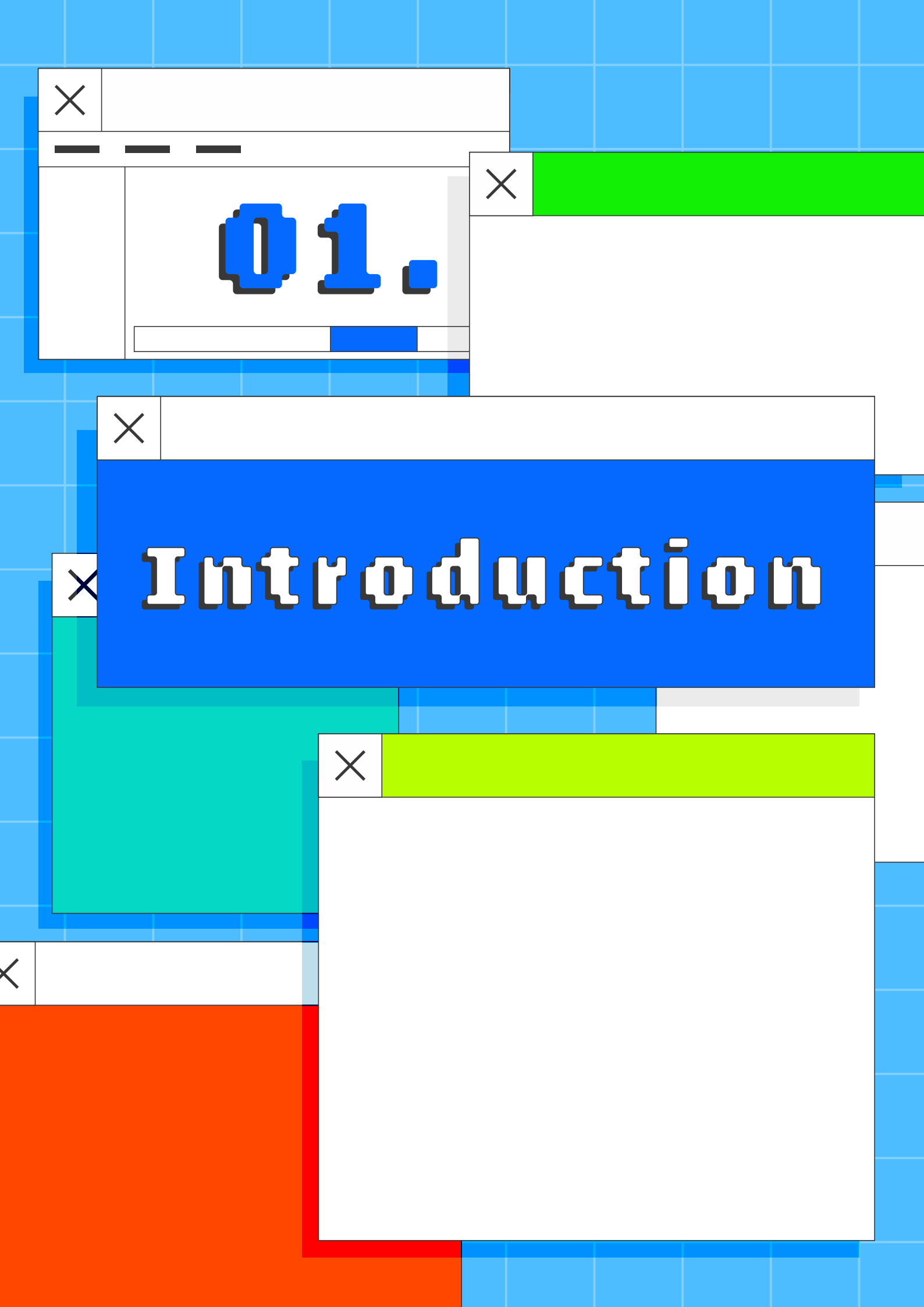
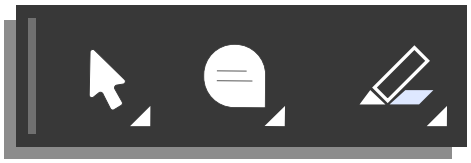

01.
Introduction



Young people around the world engage daily with media platforms to seek information, explore a variety of topics, and interact and collaborate with others (Leadbeater and Miller, 2004[1]). The increasing use of media platforms is profoundly transforming society and popular culture (Hilbert, 2020[2]), empowering individuals not only to consume but also to generate media and online content. Today, digital tools, media and technology are embedded in almost every facet of daily life, influencing both public and private spheres (Burns and Gottschalk, 2019[3]).

The growing use of platforms that allow sharing and interaction through videos, music, blogs, articles, podcasts and direct communication has fostered greater opportunities for freedom of expression, collaborative knowledge creation, and citizens' engagement (Backstrom et al., 2006[4]). Today it is easier than ever for people to organise themselves with the purpose to engage in social, cultural and political action with the assistance of media platforms (Kizgin et al., 2019[5]). There is an additional excitement around artificial intelligence (AI) due to its simplicity, intuitiveness and ability to create digital media messages – including text, images, audio, videos – in seconds (Fosco et al., 2022[6]).

The integration of media platforms within education has similarly unlocked a wide range of opportunities. These tools empower students to access information quickly, collaborate across geographical distances, and contribute to knowledge creation – which in turn may foster creativity, critical thinking and civic engagement (Gonzalez-Mohino et al., 2023[7]). Media platforms have also fundamentally transformed the way education is delivered, supporting remote and hybrid models, innovative pedagogies and continuous feedback regardless of location. This shift breaks down traditional barriers and redefines the classroom experience for both learners and educators. In addition, these platforms enable more personalised and flexible learning experiences, and tailored instruction to diverse student needs (Schmid, Pauli and Petko, 2022[8]).

However, alongside the advantages offered by media platforms and AI systems there are also notable challenges. Most notably, information available online is not always reliable, as media messages are produced and disseminated for different motives – including entertainment, persuasion, or profit. Additionally, the drive to prioritise rapid publication to meet web traffic demands may lead to diminished content quality and to dissemination of misinformation (Chalaby, 2000[9]).

These challenges are only exacerbated by the rapid advances in AI systems, which make it easier and faster to produce deceptively realistic content, and which often provide students with error-filled or inappropriate responses (Trattner et al., 2022[10]; Fulsher, Pagkratidou and Kendeou, 2025[11]). Students may also get exposed to a variety of other dangers including cyberbullying, identity theft, invasion of privacy, defamation and/or online grooming across media platforms (O'Reilly, 2020[12]).

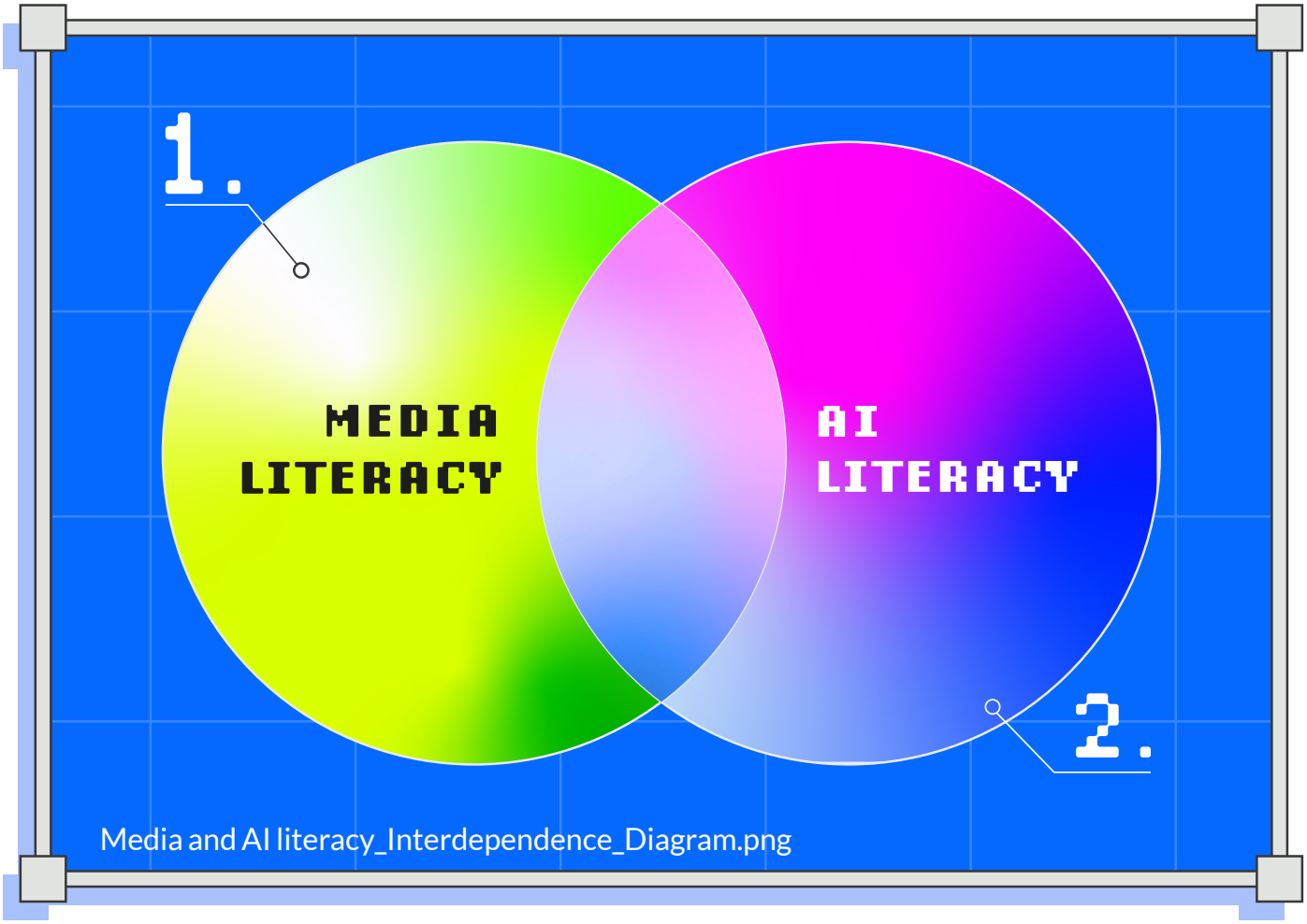
In the field of education, there are also concerns about plagiarism, the authenticity of student work, and ongoing debates whether allowing students to use these tools is pedagogically appropriate (Kosmyna et al., 2025[13]) or academically fair (Tlili et al., 2023[14]). As AI systems continue to influence educational practices, questions persist regarding the fundamentally changing competences required of students, and whether greater emphasis should be given to competences like critical and ethical thinking that could help guide students to decide when and how to use AI systems (Nygren, 2025[15]).

The fundamental step for tackling these challenges, while grasping the new opportunities these tools afford, is to develop Media and AI Literacy. These competences are vital in today's world as they equip individuals with crucial skills to evaluate the credibility, quality and purpose of media messages, supporting them to take well-informed and responsible actions as they participate in society (Livingstone, 2004[16]; Karaduman, 2015[17]).

In a digital world where media platforms serve both as communication channels and repositories of personal data, Media and AI Literacy also empowers users to safeguard their privacy and promote their well-being (Schreurs and Vandenbosch, 2021[23]) (Park, 2013[24]).

Naturally, efforts to nurture these competences are growing (Adams et al., 2023[25]; Hill, 2022[26]). Examples include the integration of media literacy into education curricula (e.g. Finland), the development of applications and games for AI literacy extra-curricular activities (e.g. AI Campus or Hour of AI by Code.org), and the creation of international competency frameworks (e.g. DigComp). These efforts show that Media and AI Literacy can be taught transversally across various subject areas and disciplines.

It is thus essential to continuously monitor the real-world effectiveness of these initiatives given the significant implications involved in their implementation (Roozenbeek, Remshard and Kyrychenko, 2024[27]). The new PISA Assessment of Media and AI Literacy (MAIL) represents a valuable tool to provide insights into the extent to which young students have acquired the skills necessary to engage proactively and critically within environments increasingly influenced by media platforms and AI systems.



Media and AI literacy_Interdependence_Diagram.png

Box 1.1. The Interdependence of Media and AI Literacy

1. Media literacy is the ability to access, comprehend, analyse, and create media, while reflecting on its impact on individuals, institutions and society. At the core of media literacy lies the critical thinking skills needed for engaging with, understanding, assessing, and filtering the images, words, and sounds encountered through books, newspapers, magazines, radio, television, video games, the Internet and social media. Today, digital technology and AI systems are embedded across all forms of media as central elements of the media landscape.

2. AI literacy represents the technical knowledge, durable skills and future-ready attitudes required to thrive in a world influenced by AI systems. It enables learners to engage, create with, manage and shape AI, while critically evaluating its benefits, risks and ethical implications (EC-OECD, 2025[18]).

Box 1.1. The Interdependence of Media and AI Literacy

The current media landscape faces "a crisis of information" permeated by "largely invisible algorithms and increasingly invisible information systems" (Haider and Sundin, 2022, p. 9[19]). From automated news articles to AI-generated images and videos, these systems can shape the narrative, select visuals and determine the tone of the message with minimal human oversight.

Media literacy without AI literacy thus risks becoming outdated in today's rapidly evolving digital landscape. Without an understanding of how AI curates, generates, impacts, and amplifies content, media literacy efforts may overlook the subtle yet powerful ways technology filters and frames reality, leaving critical gaps in the ability to discern authenticity and bias.

At the same time, when AI literacy is not considered in an inter-disciplinary and broad manner risks becoming rather technical and disconnected from the broader social, cultural and ethical context in which media messages are constructed and received. In other words, understanding how AI systems function is valuable, but without the tools to critically evaluate the narratives, representations, and biases these systems propagate, learners may fail to fully understand how AI outputs are shaping meaning and influencing public perception.

Therefore, AI literacy intersects with media literacy because of how AI generates digital content (i.e. text, image, sound, music and video), transforming media production; how AI curates information flows through recommendation systems, shaping learners media consumption, thus shaping what learners see and know; and how AI itself functions as a medium or environment (e.g. conversational agents, and friendship chatbots), mediating learners' social and emotional life.

Nonetheless, one important caveat still remains: while media literacy benefits from an established disciplinary knowledge base (Hobbs, 2025[20]), AI literacy is a relatively new field (Gu and Ericson, 2025[21]; Ng et al., 2021[22]). The jointly developed European Commission-OECD AI Literacy Framework (EC-OECD, 2025[18]) offers a common understanding of the competences students in primary and secondary education need in a world increasingly influenced by AI systems, and to support education systems in integrating AI literacy across subjects and grade levels.

In addition, the PISA 2029 MAIL Assessment aims to measure to what extent learners can critically navigate this digital media landscape that is increasingly influenced by AI systems. Although there are naturally occurring synergies between the two – given the intersection of AI systems and media platforms – the EC-OECD AI Literacy Framework offers a more targeted approach focusing on the domain of AI – including more technical understanding of different types of AI systems, and their application to non-media environments – which helps to inform the AI competences in the MAIL assessment. Nonetheless, the PISA 2029 MAIL Assessment Framework takes a broader approach to media literacy in the context of the advancements of AI systems, and being designed to inform an international data collection, also goes more in depth in defining measurement strategies and tools.

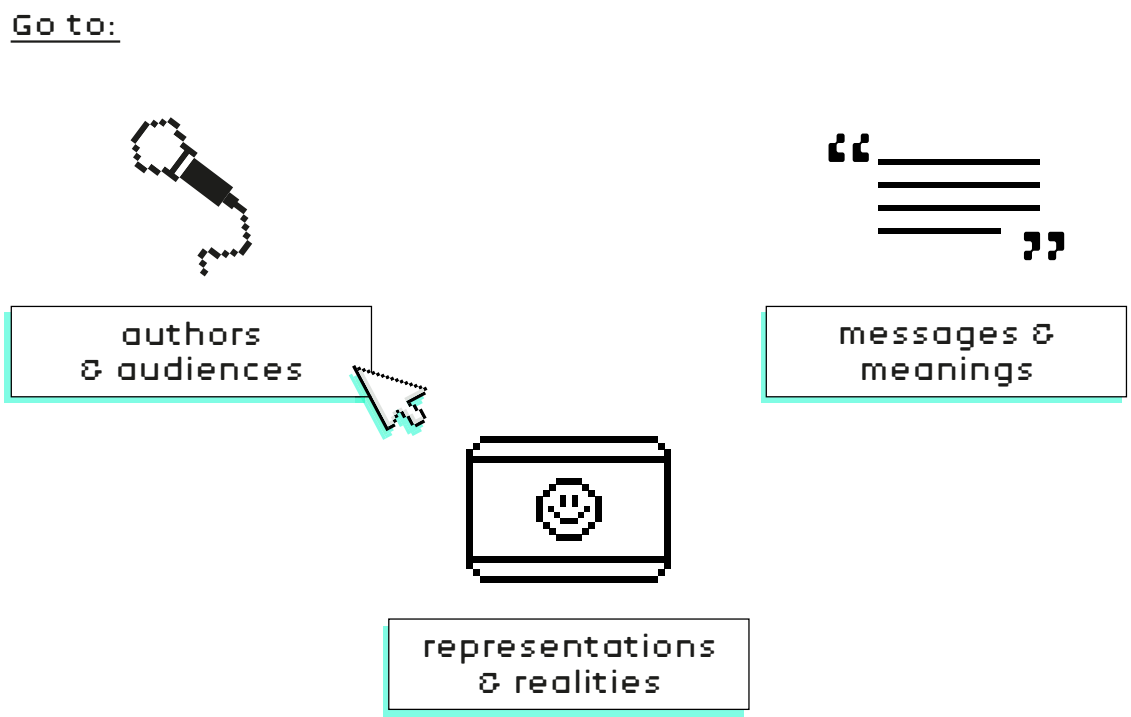
02.

The key concepts of Media and AI Literacy

The rise of digital and now AI technologies have fundamentally disrupted and reshaped the media landscape. This shift has not only transformed the entertainment and media industries, but also the very needs and expectations of individuals – as both consumers and creators of information, entertainment and persuasive messages (Lotz, 2021[28]).

The omnipresence of screens – from smartphones and tablets to laptops and smart TVs – has changed the rhythms of family life and created new social expectations (Introna and Ilharco, 2006[29]). The rapid advancement of algorithmic and AI personalisation further complicates this media environment (Holmes et al., 2025[30]), and has fragmented audiences, fostered the emergence of echo chambers and filter bubbles (Habermas, 2022[31]), and made it easier to monetise attention (Agrawal, Gans and Goldfarb, 2022[32]).

For children and young people – whose engagement with digital content is both intense and formative – Media and AI Literacy pedagogies are a form of culturally responsive teaching that engages students because it connects with their lived experiences (Trope, 2021[33]). To cultivate these essential literacies, it is crucial to examine three interconnected dimensions at the heart of media and AI engagement: the roles of authors and audiences, the construction and interpretation of messages and meanings, and the ways in which representations reflect and distort realities.



2.1. Authors and Audiences

Table 2.1. Big Ideas about Authors and Audiences

Media Literacy Ideas	AI Literacy Contributions to Media Literacy Ideas
Authors create media messages for different purposes and target specific audiences.	AI-generated messages are produced through human-machine collaboration. Data, design, and user input shape both purpose and audience.
Socio-economic and cultural context matters in how authors create messages and audiences interpret them.	Socio-economic and cultural context shape how people prompt, interpret, and respond to AI-generated outputs.
Economic and political forces shape the power, incentives, and constraints affecting media creators and audiences.	The technology industry, driven by economic and political interests, shapes how AI systems are developed and deployed, and influences how people access, create and share information.

In today's world, anyone can assume the role of an author. Professional media producers, influencers and developers of AI systems craft messages and platforms for specific purposes, and often for specific audiences, as every digital interaction becomes commodified (Center for Humane Technology, 2021[34]).

The creators' intentions may range from informing, entertaining, or persuading, to collecting data for commercial gain or influencing public opinion. Thinking of authors and audiences requires learners to consider not only who authors a message or shapes an AI system, but also the broader political, economic, regulatory and business contexts in which these systems operate (Napoli, 2012[35]). Knowing about these structures helps learners critically evaluate why and how messages circulate and evaluate how power dynamics influence both creation and interpretation.

Nonetheless, audiences are not passive recipients. Every media or AI interface is interpreted through the diverse lenses of individual background, culture and experience. Audiences may also respond to media messages in unexpected ways, remixing their content, or even subverting the intended meanings. This dynamic interplay between authors and audiences underlines the importance of interrogating not just what is said or shown, but also for whom and why.

This questioning is crucial considering that young people are among the earliest and most enthusiastic adopters of media platforms – often embedded with AI systems. This rapid adoption brings risks: beyond concerns about exposure to inappropriate content or digital dependence, there are also substantial issues related to persuasive techniques, privacy and surveillance that users may not fully understand (Christakis and Hale, 2025[36]).

Ultimately, both authors and audiences shape and are shaped by these dynamics: creators bring their intentions, backgrounds, and perspectives to the messages they produce, while audiences actively interpret and negotiate meaning based on their own experiences and contexts. This means that an assessment of Media and AI Literacy should invite students to reflect on the complex social, cultural, historical and technological processes that influence authors and audiences (Kellner and Share, 2019[37]).

2.2. Messages and Meanings

Table 2.2. Big Ideas about Messages and Meanings

Media Literacy Ideas	AI Literacy Contributions to Media Literacy Ideas
Media messages are constructed to inform, entertain and/or persuade.	AI systems generate, filter, and personalise media messages, and shape how people access and experience information, entertainment and persuasion.
Media messages contain values, ideology and specific points of view.	The training data and design choices underlying AI systems embed values and biases that shape the outputs that users receive.
Media messages affect people's beliefs, attitudes and behaviours	AI systems influence people's beliefs, attitudes, and behaviours through the way they filter, personalise and present information.

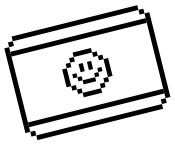
Media messages are not only vehicles for information or entertainment, but they are also powerful instruments of influence. Authors invest time and resources in crafting messages that achieve specific goals, recognising that messages can sway beliefs, attitudes, and behaviours. The impact of such a message may be fleeting or profound, but it may shape how individuals see themselves, their communities and the broader society (Pangrazio and Sefton-Green, 2021[38]).

Therefore, the construction of messages – whether by humans or AI systems – is a deliberate process modelled by production techniques, symbolic choices, and strategic intent. In this context, authors engage in a range of tools to encode meaning (Jiang, Vetter and Lucia, 2024[39]).For example, in a photo, the use of colour, lighting, distance from the lens and the position of the subject depicted may all be strategic choices deployed by the photographer. In a film, dialogue, characters, plot, action and special effects are production elements that help the filmmaker accomplish the purpose of narrative storytelling. In writing, an author uses sentence structure, vocabulary and narrative devices to develop ideas.

In generative AI (GenAI) systems, humans design and train complex machine learning algorithms that analyse vast datasets of existing content (i.e. text, audio, video, images and code) to learn statistical patterns and relationships. Using these learned patterns, the AI system generates new content by predicting what is most likely to come next, producing results that feel both familiar and novel, and are influenced by the design choices of the human developers (Klein et al., 2025[40]).

However, not only production, but also reception, shape how a message's symbols and signals are interpreted. Every communicative act – whether it strives for neutrality or not (Klein et al., 2025[40]) – carries embedded values, points of view and ideological leanings (Vraga and Tully, 2019[41]). Meaning is not a fixed property embedded in the message itself but emerges through active interpretation by audiences.

To interpret messages critically, learners must be equipped to recognise the strategies used to construct and convey meaning, to question whose interests are served, and to identify cues or patterns that may signal manipulation or bias. This includes analysing the rhetorical, visual, and algorithmic techniques employed, as well as understanding what messages are being filtered out by AI systems and how AI-generated content can intentionally or inadvertently reinforce certain ideologies or values (Fazio et al., 2024[42]; Hu et al., 2024[43]). This means that an assessment of Media and AI Literacy should include realistic reflections on the underlying decisions about what has been included, highlighted and omitted from media messages.



2.3. Realities and Representations

Table 2.3. Big Ideas about Representations and Realities

Media Literacy Ideas	AI Literacy Contributions to Media Literacy Ideas
Media messages are selective representations of reality.	AI-generated messages are constructed representations of reality shaped by both human choices and machine processes
Media messages tend to use generalizations to express ideas and information.	AI systems and AI-generated content encode and amplify biases present in their training data and design choices.
The credibility of media messages is judged using features like authority and authenticity.	The credibility and trustworthiness of AI systems is judged by using features like transparency and explainability.

Messages are selective representations of reality. Media and AI-generated messages powerfully influence our perceptions of reality by constructing selective – and sometimes fully fabricated – representations of the world through symbols, images, and narratives that serve as stand-ins for complex realities that cannot be fully captured (Lippmann, 2018/1922[44]). Media messages are thus all inherently incomplete, since no message can encompass the full richness or nuance of lived experience or capture the complexity of real events. The boundaries between symbol and reality are often blurred, making it easy to mistake representations for reality itself.

Therefore, media and AI-generated messages are not mere windows onto the world, they are curated, edited, and often strategically crafted representations, reflecting social, cultural, and historical pressures, as well as ideological interests, and power dynamics (Hall, 2009[45]). Stereotypes, for example, provide a convenient shorthand for portraying groups, events, or ideas. Filmmakers and writers may use stereotypes because they provide an effective shorthand for depicting personalities, relationships, events and experiences quickly. However, these simplifications also risk distorting our understanding and perpetuating social harm (Arendt, 2013[46]).

This situation is further complicated when AI systems, trained on massive datasets shaped by historical prejudices, inadvertently perpetuate or even amplify existing stereotypes in their outputs. Photorealistic deepfakes, generative text, and other synthetic messages can construct convincing – but altered or entirely fabricated realities. AI systems may also not fully capture the nuances of different languages (i.e. when employing sarcasm for social commentary in small local languages) and present these simplifications as authoritative or "real". As many individuals frequently rely on these mediated depictions, especially when lacking firsthand experience.

In this context, the credibility of both human- and AI-generated media messages is assessed using cues like authenticity, expertise, trustworthiness, and authority – qualities that are themselves constructed through community norms and technological practices. Thus, an assessment of Media and AI Literacy should include realistic ways in which individuals question the reality presented to them, scrutinise who is shaping these narratives, and understand how certain groups or perspectives may be privileged or marginalised.

NEXT

03.

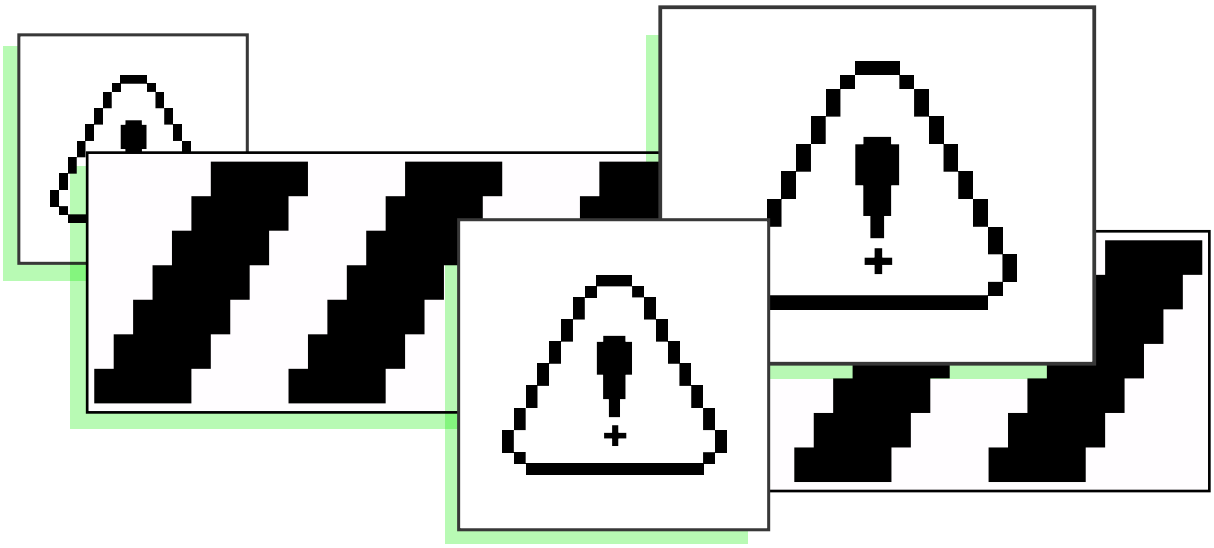
How Media and AI Literacy Addresses Risks and Leverages Opportunities in an Evolving Digital World

3.1. Media and AI Generate Different Types of Risks for Learners

The rapid changes in digital media, especially with AI-driven creation and distribution, have amplified some already existing risks and challenges. At a personal level, smartphone and Internet use, as well as the use of AI-driven platforms, expose users to a variety of intentional and unintentional risky online experiences, and reveal increasing risks associated with cognitive offloading, encompassing a wide spectrum of online activities that affect psychological, social, cognitive and physical development and well being. Furthermore, the addictive nature of some online videogames and personalised feeds on social media platforms, and the emotional impact of algorithmic manipulation or deep fakes, can erode social connections and trust, foster anxiety, and thus challenge healthy development. (Machackova, 2024[47]).

Exploiting people's lack of digital, media and AI competence has also become a growing industry as cyber-attackers use malware, other strategies to target vulnerable users like scams. AI can automate and scale phishing scams, deepfake-based fraud and malware attacks, using algorithmic targeting to amplify virality (Chergarova et al., 2022[48]; Lin et al., 2024[49]). These types of campaigns could potentially sway public opinion, influence elections, destabilise democracies and exploit societal divisions (Ecker et al., 2025[50]) – often with remarkable speed and reach (DiResta, 2024[51]). These vulnerabilities to cyber-attacks are not distributed equally: traditional divides based on gender, age and education persist, with marginalised groups at greater risk (Dodel and Mesch, 2018[52]). In this context, the power of the companies operating media platforms and AI systems has increased.

Furthermore, the personalisation and curation of digital content by a handful of dominant platforms, increasingly shaped by AI systems, narrows the diversity of viewpoints and reduces exposure to alternative perspectives (Zuboff, 2019[53]). Recommendation systems – that are almost always proprietary – can reinforce echo chambers, filter out dissenting information, and push users toward synthetic realities curated to their existing beliefs or consumer profiles. This concentration challenges governments to maintain democratic integrity and a free, open media ecosystem (European Commission, 2020a[54]).



3.2. Media and AI Literacy as an Urgent Need to Address these Risks

The changing media landscape introduces urgent questions and opportunities for education (European Commission, 2020b[55]). Education systems now need to reflect on how to ensure that all students are equipped with the skills and mindsets needed to thrive in a mediatised digital society, how to foster responsible and effective participation in online communities, how to encourage thoughtful engagement with diverse viewpoints, and how to support the creative use of digital media for problem-solving and global understanding (Jenkins et al., 2009[56]).

Media and AI literacy has become essential for questioning what is "real", interrogating whose interests are served, and developing the critical faculties needed to navigate and help define the mediated realities of our time. In today's world, critical analysis of media messages, media platforms, and AI systems leads people to be more aware of the constructed nature of knowledge and their incomplete understanding (Park et al., 2023[57]). It supports young people to deal with the overwhelming abundance of information adopting strategies like selective filtering and deliberately blocking or tuning out low-quality or misleading content (Kozyreva et al., 2023[58]), without losing sight of what happens around them.

Media and AI Literacy can increase students' engagement with schooling, as learners perceive it to be relevant to their lived experience with media and popular culture (Martens and Hobbs, 2015[59]). Approaches that integrate media and AI literacy in education have also been found to increase engagement with political, social and cultural issues (Kahne and Bowyer, 2019[60]), and to help learners to be critical about news and current events (Hobbs et al., 2013[61]). In general, the more active people are online, interacting with digital content or other people, the more likely they are engage in civic activities (Park et al., 2023[57]).

Box 3.1. Example Media and AI Literacy Questions

Authors and Audiences:

- Who or what created this message? Was AI involved, and if so, at what stage (generation, editing, curation)?
- Who is the audience and how might AI have tailored this content to reach them?
- Who benefits from it, including AI companies, media platforms, or media collectors?

Messages and Meanings:

- Why am I seeing this message, did an algorithm select or recommend it to me?
- What is the purpose, and how might AI systems have shaped this purpose?
- How can this message or output be interpreted, and what biases may be amplifying?

Representations and Realities:

- How was this work created, what mix of human and machine processes may have been involved?
- What data or sources might the author or AI systems have drawn from to create this?
- How are values, ideologies and points of view represented?
- How might AI's role in creation affect the credibility or authenticity of this message?

3.3. How Media and AI literacy Connects to Other Competences

Media and AI literacy requires strong foundational knowledge and skills. It is not possible to expect that students can exercise critical thinking, creative expression, ethical judgement, social responsibility, or citizenship engagement if they are not fluent readers, have solid scientific and mathematics foundations, have in-depth knowledge of scientific critical thinking, and have had exposure to a diverse set of knowledge, key ideas and practices in the social sciences and the humanities (Macgilchrist, 2021[62]; Kasneci et al., 2023[63]). Media and AI literacy is therefore a cross-domain topic relevant in all school subjects. Teaching needs to then foster inquiry-based learning approaches helps nurture adaptive, active and creative minds, empowering learners to engage in critical and innovative problem-solving. Practising and developing digital skills and computational thinking also represent an important requirement for students to develop Media and AI literacy.

Media and AI literacy instruction can be connected to all disciplinary areas that are present in modern curricula. **Table 3.1** presents several example activities that demonstrate how Media and AI Literacy could be connected to different subjects. What is common across these activities is the need to use active, inquiry-based learning subjects. Teaching needs to also foster inquiry-based learning approaches helps nurture adaptive, active, and creative minds, empowering learners to engage in critical and innovative problem-solving approaches that invite learners to question information, reflect on the nature of the media platforms and AI systems they use, how these create messages with meanings, and how these alter representations of reality.

Reading, in particular, has a strong connection with Media and AI Literacy. Although there is clear overlap in the critical thinking, evaluative, and reflective skills required for both domains, their distinct purposes and emphases that warrant explanation. **Box 3.2** describes the connections between the two domains.

Beyond foundational literacies and digital skills, Media and AI literacy is supported by social-emotional competences that allow learners to meaningfully navigate, interpret and shape the digital worlds they inhabit. For instance, learners need self-awareness to reflect on their digital habits and how that makes them feel; developing self-management may help students regulate their online behaviours and make thoughtful choices about how they engage with media platforms and AI systems. In addition, social awareness is crucial to help students understand how media and AI-generated messages might impact various communities. Similarly, nurturing relationship skills may help learners communicate respectfully on media platforms, particularly when discussing some of the ethical issues related to the use of AI systems. Lastly, responsible decision-making is essential for evaluating the credibility of online information, anticipating the potential consequences of sharing AI-generated content, and making informed choices that reflect both personal values and the broader impact on society. **Table 3.2** shows how Media and AI Literacy connects and could strengthen the social and emotional skills that students need to thrive.

go to Table 3.1 go to Table 3.2 go to Box 3.2

Table 3.1. How Media and AI Literacy Connect to Educational Subjects

Subject	Example Connecting Activities
Reading	› Reflect on how media platforms and AI systems personalise news feeds in ways that may affect people's interpretation of current events › Compare journalistic accounts of current events with AI-generated summaries to identify potential differences in tone, bias, or emphasis
Mathematics	› Examine how algorithms target advertisements based on user data › Investigate the role of data sampling and bias in AI predictions regarding social media engagement
Science	› Explore how different types of media depict climate change scenarios and consider the impact of media representation on public opinion › Discuss the ethical implications of AI in scientific research by examining media coverage of AI breakthroughs and controversies
History	› Evaluate the veracity of primary and secondary sources › Assess how photography and fiction films influence people's understanding of historical events › Debate the impact of deepfakes and other AI-generated content on the authenticity of historical evidence in digital and traditional media
Geography	› Evaluate the influence of AI-curated media on public perceptions of global issues like migration or natural disasters › Use mapping tools to analyse media coverage of different regions and identify potential biases
Foreign Languages	› Compare media messages about the same international event across news sources in different languages to examine tone, point of view, and bias › Analyse social media memes and interpret how wordplay and images create meaning and ambiguity
Arts	› Experiment with the use of digital platforms and AI systems to create art and discover how audiences perceive the value of AI-created pieces › Examine the copyright issues concerning human-machine collaboration and reflect on cultural understandings of the nature of creativity and originality
Computer Science	› Develop a simple AI model to recommend media content and reflect on the potential biases introduced by the data selected for training › Reflect on the positions of various stakeholders (consumers, platforms, governments) in assessing the impact of AI systems that curate media content

Box 3.2. Connections between Reading and MAIL PISA Domains

Although there are significant synergies between MAIL and Reading, some competences are labelled the same in both PISA frameworks. However, several key differences distinguish the two domains. MAIL places a stronger emphasis on the creation of media artifacts, encouraging users to produce and interact with a more diverse range of media formats beyond texts (e.g. multimodal and video content). In contrast, Reading is more concerned with the inclusion of written texts, although the assessment will also include some multimodal texts and incorporate AI-generated texts.

Another notable distinction lies in the tools and processes each domain prioritises. MAIL provides users with a broader array of searching and browsing tools, explicitly focusing on querying and navigating through various types of media. The query function and specific AI affordances (e.g. interaction with chatbots) will not be part of the reading assessment.

Both MAIL and Reading encourage critical thinking about form, content, and the veracity of information. Even though these evaluation processes are central to both MAIL and Reading, the assessment of students' evaluation processes in these domains will be tied to the specific affordances of each domain. For example, evaluation processes in MAIL will be assessed while considering specific media and AI system affordances (i.e. algorithms, gen-AI chatbot interactions, search querying). Thus, MAIL will focus more on reflective practices that are more attuned to ethical and responsible issues, particularly in the context of media creation and digital interaction. In Reading, evaluation processes emphasise text comprehension and analysis, such as identifying inconsistencies or conflicts within and between texts, corroborating information across multiple texts, and analysing written arguments

Finally, while both domains consider the importance of monitoring and awareness, they differ in the types of conflict they address. MAIL is more focused on interpersonal or interactional conflict that may arise through media engagement, whereas Reading is concerned with conflicts or contradictions that occur within textual content. These differences highlight the unique contributions each domain makes to PISA 2029, and to the broader landscape of information, Media and AI Literacy.

Table 3.2. How Media and AI Literacy Connects to Social and Emotional Competences

Dimension	Example Connecting Activities
Self-Awareness	› Recognise and name one's own emotions when responding to online news or media content › Identify personal strengths and areas for growth when engaging with known and new media platforms and AI systems
Self-Management	› Manage stress and staying calm when facing challenging discussions about controversial media topics › Set personal goals for responsible technology use
Social Awareness	› Demonstrate empathy by considering how media and AI-generated messages may affect different communities › Reflect on cultural differences when comparing international news stories in multiple languages
Relationship Skills	› Collaborate with classmates to create digital artwork using media platforms and AI systems while respecting everyone's input › Communicate respectfully when debating the ethical implications of AI systems in media
Responsible Decision-Making	› Evaluate the credibility of online information before using it to inform decisions or sharing it with others › Reflect on the potential consequences of using AI-driven tools to create or spread media content

Although there is growing support for Media and AI Literacy pedagogies among policymakers, educators, and community leaders, full implementation is still quite difficult to scale (Bateman and Jackson, 2024[64]). Many schools lack sufficient resources and digital devices which makes access to media literacy opportunities challenging; many teacher professional learning and development programmes do not include comprehensive content on media literacy, which in turn makes teachers feel less prepared to integrate these competences across diverse subjects-especially as AI systems continue to quickly evolve (Chen, Salleh and Salleh, 2025[65]). Education systems must then rise to the challenge by embedding the principles of Media and AI Literacy across curricula, ensuring equitable access to resources, and supporting ongoing teacher professional learning and development (PLD).

04.

The Definition of Media and AI Literacy in PISA

Definition of M.A.I.L

The PISA 2029 Innovate Domain Assessment defines Media and Artificial Intelligence Literacy (MAIL) as a set of competences required to engage effectively, ethically and responsibly with digital content, media platforms, and AI systems.

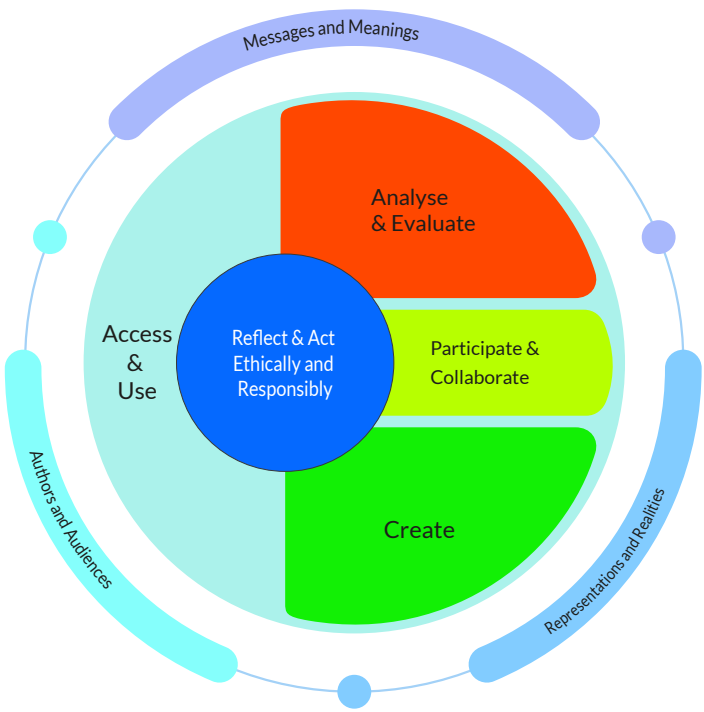
The definition and associated competences reflect the intersection between media and AI literacies, with a strong emphasis on effective engagement, ethical and critical evaluation, and responsible production within a digitally interconnected world. This framework aims to provide an adaptable and robust foundation – an anchor point – for cultivating the competences necessary to navigate, assess and engage with digital content, media platforms, and AI systems in an ethical and responsible manner.

Furthermore, the competences encompass not only cognitive capabilities but also embed the social, emotional and motivational aspects of MAIL, recognising that meaningful engagement involves willingness and self-regulation. These competences also acknowledge that AI systems increasingly function as environments that mediate interaction, influence perception, and shape how people learn, communicate, and relate – cognitively, socially, and emotionally – with and through machines.

As illustrated in **Figure 4.1**, being capable to access digital content and use media platforms and AI systems is a foundational condition for the development of other competences related to the analysis and evaluation of digital content, to the participation and collaboration through media platforms and with AI systems, and to the creation of digital content.

Moreover, the model shows that the competence to reflect and to act ethically and responsibly when engaging with digital content on media platforms and AI systems is transversal to all other competences in this model. In other words, this model argues that students must reflect and consider the ethical implications of all their actions on media and AI platforms. The next sections describe these competences in greater detail.

Figure 4.1. Media and AI Literacy Competence Model



4.1. Reflect and Act Ethically and Responsibly

Definition of Reflect and Act Ethically and Responsibly

Reflect and Act Ethically and Responsibly is defined as the ability to consider accountability, fairness, and respect for human values when engaging with digital content, media platforms, and AI systems.

Digital media platforms and AI systems are deliberately designed to capture and hold attention. They accomplish this through features like notifications, in-game rewards, algorithmically promoted content, and "like" counts – all of which encourage people to keep checking, scrolling, posting, and comparing themselves to others (Zuboff, 2019[53]). These same design choices tend to amplify content that sparks strong emotional reactions, including outrage and fear, as this content keeps people engaged (Terenzi, 2024[66]).

Ethical and responsible reflection involves students developing self-awareness about how digital interactions affect their attention, emotions, cognitive development and overall well-being (Holmes et al., 2025[30]). Students are expected to employ strategies to maintain distance from manipulation online, and consider critically how much time they spend online and interacting with AI systems (Haider and Sundin, 2022[19]). Students should be able to demonstrate an understanding of how their choices, posts, and platform interactions shape their long term online identity and public reputation. Moreover, students are then expected to consider how AI systems may influence their access to information, social behaviours, and overall wellbeing. Competent students can reflect on how multiple factors – including the design choices made by developers, the data used for training, and the algorithms employed by AI-based recommendation systems-influence their own and other people's perceptions, communication, and actions, carefully considering the power dynamics embedded in these systems.

Ethical engagement is rarely simple; responsible action is seldom easy. Students will encounter many situations where different values and principles – such as privacy, openness, equity, and efficiency – come into tension. In these moments, ethical and responsible action is less about following rules, and more about making decisions that balance competing priorities, and decisions that consider the possible effects on others.

For example, it includes the everyday micro-decisions that shape digital life: whether to forward a questionable meme, how to respond to a peer online, whether to use generative AI for a school assignment, what permissions to grant an app, or whether to speak up when something feels off. Ultimately, acting ethically and responsibly is about cultivating an ethical orientation toward media platforms and AI systems and being accountable for one's actions in digital contexts, and upholding core human values-including fairness, respect, inclusivity, transparency and sustainability in digital contexts (Hobbs, 2010[67]).

By embedding ethical considerations, responsible actions and personal accountability throughout the model, this overarching competence calls on students to continuously and critically examine how their choices in digital spaces impact others, themselves, and broader societal structures, systems, and cultural norms (Lewandowsky et al., 2023[68]).

Table 4.1. Draft Reflect and Act Ethically and Responsibly Student Expectation Progression

MAIL Competence	Competence Level	
Reflect and Act Ethically and Responsibly	High	The student demonstrates advanced understanding of practices to safeguard privacy and sustainability, knows how to engage ethically with media platforms and AI systems reflecting on the consequences of their actions online on their wellbeing, on their peers and wider society, and can reflect on AI systems' limitations and impact on society.
	Intermediate	The student demonstrates awareness of security, ethical, sustainability and reputational aspects in media platforms and AI environments. They can consider simple trade-offs (e.g. saving time vs cheating) when taking decisions on whether and how to use online and AI tools.
	Low	The student demonstrates basic understanding of online risks and is developing some awareness of the broader consequences of their digital actions, including privacy, sustainability, ethical issues, and long-term impact on reputation, cognitive development and wellbeing.

Note: Student expectation progressions are preliminary and will be revised after the PISA pilot study and the field trial.

4.2. Access and Use

Definition of Access and Use

Access and Use is defined as the ability to effectively use, locate, query, prompt, and curate digital content on media platforms and AI-mediated environments.

Digital content, media platforms, and AI systems are woven into the fabric of our everyday lives, influencing how we seek, process and engage with information. Given the overwhelming abundance of digital content and tools, students must be able to efficiently access, sort through, and comprehend how to secure quality information relevant to their purposes. Without deliberate strategies for managing information overload and evaluating sources, students risk engaging with content superficially and relying on digital platform defaults without understanding their limitations (Bawden and Robinson, 2008[69]).

This competence involves currency with available search engines, AI tools, and other information sources. Competent students can recognise that search results are influenced by user history, location, popularity metrics and commercial interests rather than purely informational accuracy or quality (Tiernan et al., 2023[70]). They also acknowledge how AI recommendation systems shape, prioritise and personalise the visibility and ranking of content.

Therefore, access and use involve the foundational skills to engage with digital content, media platforms and AI systems. This includes care in curating, filtering, organising and storing information together with selecting tools to protect personal data from unintended AI training or surveillance, as well as ability to apply troubleshooting strategies and the capacity to select, adapt, or shift tools as needed when problems arise. Students should also be able to access and query generative AI tools.

Table 4.2. Draft Reflect and Act Ethically and Responsibly Student Expectation Progression

MAIL Competence	Competence Level
Access and Use	**High** The student strategically navigates digital environments by critically selecting search methods, protecting personal data and efficiently addressing technical challenges.
	Intermediate The student can filter information, organise content, and identify common issues, but gaps remain regarding familiarity with more complex tools, data management, understanding of recommendation systems and complex troubleshooting.
	Low The student demonstrates basic knowledge of common digital and AI tools and basic abilities to conduct searches, organise files and solve technical problems.

Note: *Student expectation progressions are preliminary and will be revised after the PISA pilot study and the field trial.*

4.3. Analyse and Evaluate

Definition of Analyse and Evaluate

Analyse and Evaluate is defined as the ability to critically assess the purpose, bias, relevance, and credibility of human- and AI-generated media content.

Analysing and evaluating across media platforms is increasingly complex as the boundaries between human and machine authorship blur. Students should therefore assess the reliability and intent of sources behind text, video, audio, and mixed media, questioning not only the accuracy of information but the motivations and processes behind its creation. The proliferation of AI-mediated content further complicates how students evaluate media messages (Hancock, Naaman and Levy, 2020[71]). AI-generated texts, images, and videos can appear authoritative while being inaccurate, biased, or driven by undisclosed intent (Hancock et al., 2023).

Large language models (LLMs) and other AI systems do not "understand" the information they process. Instead, they generate responses by predicting what is most likely based on their models. Because their models are developed via masses of unfiltered training data, generative AI tools are likely to continue to recapitulate bias patterns despite advancements in AI bias detection (Sahoo et al., 2024[72]). Students should then be cognisant that some of these generative AI may "hallucinate", that is, produce content that seems credible yet is factually inaccurate (Maleki, Padmanabhan and Dutta, 2024[73]), and some even argue these hallucinations are a mathematical property rather than a feature of faulty training (Kalai et al., 2025[74]). Thus, students must approach media messages with skepticism, question their accuracy, and verify their claims against reliable sources.

However, misinformation spreads not only through deceptive intent but also through cognitive shortcuts (e.g. confirmation bias, authority heuristic) that make false or misleading content seem credible (Pennycook and Rand, 2021[75]; Metzger and Flanagin, 2013[76]). For this reason, literacy-based interventions hold promise for reducing individual-level vulnerability to misinformation. Research on psychological "inoculation" (Maertens et al., 2021[77]; Roozenbeek and van der Linden, 2024[78]) suggests that pre emptive exposure to common manipulation tactics – such as emotionally charged language, omission of key facts, or deepfake imagery – helps individuals build resistance to the use of such tactics in the media content people see. Misinformation is not the only challenge; even accurate information can be misleading if it is interpreted incorrectly or assumed to be more conclusive than it really is: oversimplifying complex issues, mistaking correlation for causation, or seeing patterns in random noise.

Analyse and evaluate require students to recognise how persuasion works, push back against overly simplistic narratives, and approach digital content with a healthy dose of skepticism rather than passive acceptance. Competent learners consistently deploy a robust set of analytic tools including identifying authorship, triangulating sources, reading laterally, assessing bias and expertise, and questioning how some AI systems filter prioritise and generate information. They are expected to consider who benefits from a message, what information and perspectives might be missing, and how persuasive techniques are used to mislead or manipulate audiences. Competent students are also aware of the economic and social incentives that drive digital media production – whether a message is designed to inform, persuade, provoke outrage, or generate profit – and adjust their evaluation strategies accordingly.

These students demonstrate their competence by tracing claims of an AI system back to original sources, assessing whether AI has introduced distortions, and identifying when engagement-driven systems have shaped what information is most visible. Lateral reading remains a crucial practice, but it is combined with additional strategies to deal with hallucinated outputs and recognize the effects of algorithmic personalization (Wineburg and McGrew, 2019[79]).

Table 4.3. Draft Analyse and Evaluate Student Expectation Progression

MAIL Competence	Competence Level	
Analyse and Evaluate	High	The student competently seeks and evaluates diverse, credible sources and perspectives, critically analyses the mechanisms and biases of media/AI tools and actively considers the impact of confirmation bias to form a well-founded, multifaceted understanding.
	Intermediate	The student demonstrates awareness of credibility, bias, and external influences in information analysis and evaluation, shows familiarity when conducting lateral reading and identifies when accurate information is presented in misleading ways.
	Low	The student employs basic strategies to assess the reliability and intent across different media, like authorship and credibility of the source, and shows awareness of the importance of questioning the accuracy and motivation behind digital media and AI-generated messages.

Note: *Student expectation progressions are preliminary and will be revised after the PISA pilot study and the field trial.*

4.4. Participate and Collaborate

Definition of Participate and Collaborate

Participate and Collaborate is defined as the ability to participate actively and work with others in digital contexts with an awareness of AI's role in amplifying, mediating or distorting interactions; and to collaborate or share content as appropriate.

Participation and collaboration in digital spaces signals more than access and technical skills; it requires students to develop communicative agility, social awareness (Örtegren, 2023[80]) and ethical responsibility. Online interactions are shaped by algorithms and platform rules as well as evolving social norms (Jandrić and Knox, 2021[81]; Jandrić et al., 2018[82]). Increasingly, these occur in hybrid networks of humans and AI systems. Cyberbullying, phishing and other forms of digital exploitation can undermine trust and participation in online spaces, implying that students must take responsibility for what they share with others and how they respond to others' messages (Manca, Bocconi and Gleason, 2021[83]).

Digital participation and collaboration also play an essential role in civic life. Civic participation online demands careful evaluation of information sources and an awareness of platform affordances and dynamics – the design choices, policies, algorithms, and cultural norms that shape how content circulates and how people interact (Gordon and Mihailidis, 2022[84]).

Participation describes the meaningful, critical, and socially responsible interaction in online spaces as both consumers and creators of information, entertainment, persuasion, and other types of media messages. Competent students choose to participate in online spaces that are safe, understand both the power and limits of online action and ensure their online interactions are respectful and inclusive. They can engage in discourse care, adapting their communication to context, intervening to de-escalate a conflict or protect victims, and controlling impulsive reactions.

Moreover, collaborating in digital spaces extends beyond communication to sharing and co-creating knowledge with others (Allen and Kendeou, 2023[85]). Online collaboration includes working together on shared documents, contributing to open-source projects, or exchanging ideas on social media platforms. Students should be able to use social media platforms effectively, attend respectfully to different viewpoints, and support collective knowledge production. To navigate collaborations responsibly, students are expected to understand how AI systems work – differently from humans – and how they influence engagement (e.g. through recommendation systems, content moderation) and recognise that these systems may also determine whose voices are amplified and whose are overlooked.

Table 4.4. Draft Participate and Collaborate Student Expectation Progression

MAIL Competence	Competence Level	
Participate and Collaborate	High	The student adeptly navigates, adapts communication, moderates exchanges, protects other people's right, exchanges information, collaborates and co-designs projects using media/AI tools, attempting to promote transparency, inclusivity, and social justice through these online actions.
	Intermediate	The student selects and utilises appropriate and safe media and AI tools for communication, collaboration, and advocacy. The student makes attempts to adapt communication, prevent and solve conflicts and harassment online, share tasks and design projects with others.
	Low	The student makes initial attempts to adapt communication and collaboration in digital environments and is developing their understanding on how to utilise media platforms and/or AI systems for participation and collaboration.

Note: *Student expectation progressions are preliminary and will be revised after the PISA pilot study and the field trial.*

4.5. Create

Definition of Create

Create is defined as the ability to identify a communication need, the appropriate content, and the format that will help achieve that goal using media and AI systems.

Remix culture, collaborative content creation, and open-source projects provide new venues for students to develop their creativity and contribute to shared knowledge building and collective storytelling. AI tools are now being used to brainstorm, to automate repetitive tasks, but also to open new forms of artistic and literary expression. However, these tools also raise complex questions about originality, creatorship, ethical responsibility, and disclosure (Formosa et al., 2024[86]). As they navigate this complex creative space, students must be cognisant of relevant intellectual property and copyright laws, and ethical implications of adapting or repurposing existing works. Students should then critically assess their role as human-machine "co-creators," balancing human agency with machine-assisted production (Järvelä et al., 2025[87]). Responsible student-creators must also consider the possible social impacts of their work, ensuring that their contributions are constructive, inclusive and ethically sound.

As a result, creating media requires intentionality, technical fluency, creative thinking and ethical awareness. Competent students approach creation – with or without the support of generative AI – as an iterative process. Whether writing, producing multimedia, coding interactive experiences, or working with AI-generated content, students are expected to consider why they are creating, who they are creating for, what choices they are making when they create, and how best to communicate their ideas. Effective creators use multiple modalities – storytelling, visual design, and platform-specific strategies – to engage audiences in meaningful ways and express their original ideas.

Table 4.5. Draft Create Student Expectation Progression

MAIL Competence	Competence Level
Create	**High** The student demonstrates mastery in crafting and modifying media, skillfully leveraging digital/AI tools with clarity, persistence and creative thinking. The student applies a strong ethical focus when deciding which tools to use and how to use them and tailor outputs to purpose and audience.
	Intermediate The student uses multiple media and AI tools to create messages, with basic audience awareness and is willing to make iterations to achieve originality or refinement.
	Low The student uses basic media platforms and/or AI systems to make simple edits to other people's projects, and shows basic understanding of coherence, originality and intent.

Note: *Student expectation progressions are preliminary and will be revised after the PISA pilot study and the field trial.*

In sum, the evolving digital ecosystem demands an integrated approach to literacy, where technical expertise, ethical discernment, critical analysis, collaborative engagement, and creative expression converge to support meaningful participation. The five competences of the MAIL Framework – reflect and act ethically and responsibly, access and use, analyse and evaluate, participate and collaborate, and create – serve as foundational pillars to assess whether individuals are not only able to navigate but also to shape digital environments with confidence and care. As new challenges and opportunities continue to emerge at the intersection of media and AI, these interconnected competences are essential for fostering both personal agency and a collective digital culture that is informed, adaptive, and just.

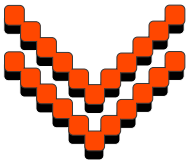
05.

The Assessment of Media and AI Literacy in PISA

In light of the accelerating integration of media and AI into our everyday lives, it is imperative to cultivate capacities that include a focus on the complex and multifaceted relationship between authors and audiences, messages and meanings, and representations and realities. This helps ensure that learners develop competencies that extend beyond mere technical proficiency and specific tools (Fazio et al., 2024[42]; Van Laar et al., 2025[88]). This assessment is designed to evaluate not only what individuals know and can do within digital environments, but also how they engage with these tools (Krutka et al., 2019[89]).

To achieve these goals, the assessment includes a series of real-world tasks that are relevant to school, work, leisure, civic life, and social relationships, involving the use of different media platforms and AI systems. In doing so, the assessment aims to provide a holistic portrait of students' Media and AI Literacy, situating individual skillsets within broader social, cultural and technological landscapes. Participants will be invited to analyse scenarios (e.g. climate literacy, digital citizenship and online safety), critically evaluate information, collaborate in digital workspaces and create original content that reflects both ethical awareness and creative intent. Tasks will be crafted to surface not only digital proficiency and cognitive skills but also ethical considerations and the motivation to explore affordances and iterate.

The MAIL expert group recommends that half of the assessment time is allocated to "analyse and evaluate" and "create" (e.g. 25% of the time for each for a total of 50% of the assessment time), and the rest be distributed across the three other competences.



5.1. Task Descriptors

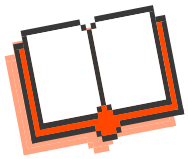
The following sections overview the different characteristics of the assessment tasks. Task developers should consider all these descriptors for the implementation of the assessment.

5.1.1. Context and Purpose >

Media and AI literacy competences are relevant to many aspects of daily life. The context and purpose dimension underscores the complexity and multifaceted nature of digital interaction that addresses both individual and social factors of technology use. For this assessment, five primary purposes shape the framework: relationships, learning, entertainment, persuasion and citizenship. These purposes serve as guiding pillars for evaluating the MAIL competences in realistic media and AI-driven environments.

- **Relationship:** The relational dimension integrates social learning theory with recent research on computer-mediated communication on media platforms and AI-mediated interaction (Hancock, Naaman and Levy, 2020[71]). Although AI-mediated connections are a growing area of study, it is important to note that most relational interactions on media platforms still occur between humans without the involvement of AI. Human-to-human communication continues to form the core of social exchanges across most digital platforms, even as AI becomes more prevalent. Nonetheless, current studies emphasise how media platforms and AI systems both facilitate and complicate human relationships, requiring new forms of literacy that account for human-AI interaction patterns and their impact on interpersonal dynamics and well-being (Yuan, Cheng and Duan, 2024[90]; Nygren et al., 2025[91]).

- **Learning:** This dimension refers to learning situations either at school or at work. Learning-related assessment tasks are grounded in constructivist and situated-learning theories, which view knowledge as constructed through active engagement in authentic, context-rich environments (Vygotsky, 1978[92]; Winne, 2020[93]). These tasks require students to navigate complex digital information ecosystems where content of varying reliability and purposes – informative, persuasive, and entertaining – is interwoven and may be misleading (Leu et al., 2013[94]). Assessment tasks therefore focus on how students evaluate information, integrate multiple sources, and regulate their learning using metacognitive and self-regulated strategies (Winne, 1996[95]; Zimmerman, 1986[96]). Reflecting real-world demands in school and work, tasks involve the use of media platforms and AI systems to acquire accurate information, assess claims, and recognise the capabilities and limitations of AI in authentic learning situations (National Research Council, 2000[97]).



- **Entertainment:** Entertainment-related assessment tasks draw on media psychology and digital media research to examine how AI reshapes recreational engagement, transforming passive consumption into interactive and personalised experiences (Sundar, 2007[98]; Valkenburg, Peter and Walther, 2016[99]). These tasks situate students in leisure-time scenarios involving social media, games, and AI-curated content, where algorithmic recommendation systems, interface and user design can strongly influence attention and engagement (Anantrasirichai and Bull, 2021[100]). Assessment tasks therefore focus on how students recognise and reflect on the role of algorithms, automation, and design features in shaping entertainment experiences, including their potential effects on attention, preferences, and behaviour (Baudrillard, 1998 [1970][101]). Drawing on informal learning contexts, tasks may involve everyday interactions with AI-powered applications – such as recommendation systems, generative tools, smartphone games or chatbots – to assess students' awareness of algorithmic bias, data use, ethical considerations, and the broader implications of AI and modern digital tools on how people spend their leisure time (Sundar, 2020[102]; Ng, 2021[103]).

- **Persuasion:** Persuasion-related assessment tasks draw on classical and contemporary theories of social influence to examine how media platforms and AI systems seek to shape attitudes, beliefs, and behaviour (Petty and Cacioppo, 1986[104]; Cacioppo, Cacioppo and Petty, 2017[105]). These tasks require students to analyse and apply rhetorical techniques - such as of logos (logical reasoning), pathos (emotional activation), ethos (charisma and credibility), and kairos (delivering a message at the right situation or moment in time) - across traditional and digital media, while recognising how algorithmic recommendation systems and AI-driven technologies can amplify persuasive effects at scale using behavioural data and predictive modelling (Akter et al., 2021[106]; Simchon, Edwards and Lewandowsky, 2024[107]). Embedded within this context, assessment tasks addressing misinformation protection focus on students' ability to evaluate claims, revise knowledge, and develop cognitive defences against (AI-enhanced) misinformation with a persuasion purpose (Lewandowsky et al., 2012[108]; Roozenbeek et al., 2022[109]; Kendeou, 2024[110]; Simon, Altay and Mercier, 2023[111])

- **Citizenship:** Citizenship-related assessment tasks are grounded in theories of digital citizenship, civic participation, and democratic education, which emphasise agency, critical consciousness, and informed engagement in public life (Mihailidis, 2018[112]). These tasks assess students' ability to seek and analyse information, evaluate news and civic claims, and reflect on how media platforms and AI systems shape civic and political participation in algorithmically mediated public spheres (Martens and Hobbs, 2015[59]; Hobbs, 2020[113]). Reflecting the broader aims of education for democratic citizenship, assessment tasks address the knowledge, skills, and attitudes needed for active participation in democratic life, positioning media and AI literacy as essential components of civic education (Borhan, 2025[114]).

  Embedded within this context, empowerment-oriented tasks focus on students' capacity to use AI systems creatively, ethically, and responsibly, including recognising bias, challenging misinformation, and exercising autonomy in digital civic engagement (Deci and Ryan, 2000[115]; Allen and Kendeou, 2023[85]; Zhang and Dafoe, 2019[116]).

By foregrounding learning, entertainment, relationships, persuasion and citizenship, this assessment framework recognises the multifaceted purposes media platforms and AI systems serve in contemporary life. These interconnected purposes establish a comprehensive foundation for evaluating competences and fostering meaningful engagement in complex, technology-mediated environments.

5.1.2. Media >

As digital technologies proliferate, the landscape of digital content grows increasingly diverse, encompassing a wide spectrum of modalities, formats and genres. Thus, the MAIL assessment must integrate this diversity, ensuring learners engage with the full range of media that permeate the current digital environments.

- **Digital text:** Digital text remains foundational, spanning web articles, social media posts, blogs, instant messages and e-books. This framework considers the evolving conventions and interactive features of digital writing, as well as learners' ability to discern credibility, recognise bias and synthesise information across dispersed interactive digital text sources.
- **Audio:** From podcasts to voice assistants, audio content is a central component of modern media engagement. This assessment framework incorporates tasks that require critical listening, interpretation of tone and subtext, and evaluation of sound-based persuasion techniques. Increasingly, learners encounter AI-generated audio content, making discernment skills ever more essential.
- **Visual media**: Visuals – still images, infographics, memes and charts – are ubiquitous in digital spaces. Learners must be equipped to interpret, analyse and create meaningful visual content, recognising both the persuasive power of images and the risks of manipulation through editing or AI-generated visuals (e.g. deepfakes).
- **Video:** Video media, including streaming content, short-form social videos, news segments and educational tutorials, demand multilayered literacy. This assessment spans comprehension of narrative structure, evaluation of production choices and awareness of algorithmic curation and recommendations.
- **AI-generated and algorithmically curated content:** Learners routinely encounter media shaped or created by artificial intelligence: personalised news feeds, generative text and images, recommendation systems and synthetic media. This framework recognises the need for critical awareness of how algorithms influence exposure, shape perceptions and mediate experiences, calling for advanced competences in monitoring, questioning and managing AI-driven content.

Explicitly incorporating these varied media types into the MAIL assessment ensures learners demonstrate literacy skills that are suitable for the dynamic and multifaceted realities of media platforms and AI-rich environments of today.

5.1.3. Tools >

Similarly, the MAIL assessment requires a thoughtful selection of tools that authentically reflect the wide range of digital and algorithmic environments learners navigate in daily life. To capture the complexity and diversity of media platforms and AI systems, each category below includes illustrative examples that mirror the real-world interfaces, functionalities and challenges learners routinely encounter. The goal is that, throughout the assessment tasks, student competences are assessed using a variety of functional tools that are accessible to students in a realistic way.

↳ Media Platforms

Media platforms are the backbone of contemporary media engagement, offering portals through which information, interaction and creative expression unfold. The assessment may employ widely used social media networks (e.g. Instagram, X, TikTok), collaborative knowledge platforms (e.g. Wikipedia), online news aggregators and instant messaging services (e.g. WhatsApp, Discord). To broaden the scope, the framework also integrates search engines (e.g. Google, Bing), email applications (e.g. Gmail, Outlook), photo and video editing tools (e.g. Canva, Adobe Photoshop, CapCut), file explorer and cloud storage platforms (e.g. Google Drive, OneDrive, Dropbox) and discussion forums (e.g. Reddit, Quora).

These platforms provide authentic contexts for evaluating core competences such as information retrieval, content discernment, source evaluation, privacy management, media creation, digital collaboration and organisational skills. For example, in potential assessment tasks, simulated social media feeds could be constructed, enabling learners to demonstrate headline verification among posts interwoven with AI-generated content and user comments. Search tasks might require critically assessing the credibility of top search results or identifying sponsored content. Email scenarios could assess the ability to recognise phishing attempts or craft clear, appropriate messages. Similarly, learners could be asked to evaluate an image for bias, organise files to support collaborative work, or moderate a discussion forum for effective citizenship.

↳ AI systems

AI systems are increasingly interwoven into the fabric of media engagement, shaping not only the information encountered but also the user experience itself. Assessment tasks may incorporate generative language models (e.g. ChatGPT, Gemini), image generators (e.g. DALL·E, Midjourney), recommender algorithms (as seen on YouTube, Netflix, or Spotify), and voice assistants (e.g. Alexa, Google Assistant). These AI systems could serve a dual assessment purpose. For instance, learners might critically analyse outputs from an AI text generator, distinguishing between factually accurate and erroneous or manipulative responses. Alternatively, tasks may involve interacting with AI-curated news feeds, algorithmically recommended video playlists, or smart search suggestions, requiring learners to question the underlying assumptions, biases, and potential echo-chamber effects inherent in algorithmic curation and filtering. Furthermore, synthetic media – such as deepfakes or AI-generated audio – will be integrated into scenario-based assessments to evaluate detection and response strategies.

Taken together, integrating a broad spectrum of media platforms and AI systems into the assessment will increase the chances that learners engage with the full range of tools shaping contemporary media and information landscapes nowadays. The inclusion of authentic, contextually relevant examples will also enhance the validity of the assessment, allowing learners to demonstrate their real-life competences within the test environment.

5.1.4. Tasks >

The tasks dimension describes the format of the activities through which learners engage with the MAIL assessment. These tasks vary in complexity – from basic verification and recognition exercises to more advanced creation and evaluation processes – and length.

The goal is to evaluate students' abilities on each of these MAIL competences across different purposes, using the short time available for assessment as efficiently as possible. In practice, PISA MAIL will use a combination of shorter multiple-choice and open response items, and longer tasks where students work in a more immersive scenario, have access to different tools and complete several items.

↳ Short Tasks

Short assessment tasks, often utilising familiar formats such as multiple choice, matching, or brief constructed response, will target in an efficient manner the competences in the model. These concise tasks will ask them to quickly demonstrate their knowledge and skills in a focused manner. Furthermore, although most of these tasks will follow a more traditional structure, they will still capture meaningful insights about the different competences, offering valid and reliable evidence about their literacy levels. **Table 5.1** provides examples of what short – and long – assessment tasks could look like in PISA.

↳ Long Tasks

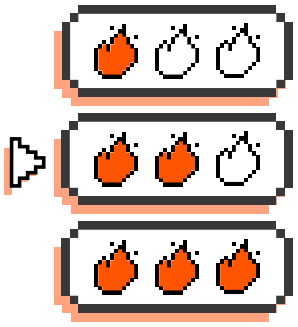
Short traditional items that ask students to select one or several options in an abstract situation could prompt reflections and responses that do not necessarily correspond to what students would do in those circumstances. Therefore, additional evidence should also be collected by observing what students do when they are in a scenario where they have more freedom to decide what action to take and which tool to use.

Simulating these digital environments – and defining the rules to evaluate sequences of behaviours – may lead to higher engagement and better measurement of complex, decision-making skills. These longer tasks allow for the observation of strategic thinking and persistence as learners navigate open-ended problems and produce more open-ended responses.

Table 5.1. Examples of Assessment Tasks by MAIL Competence

MAIL Competence	Short Task Example(s)
Reflect and Act Ethically and Responsibly	"To Share/Accept or Not?" presents learners with several short pieces of digital content (e.g. different types of photos, different types of messages), and they are asked to choose whether they would share it or not to social media and/or a group chat. Similarly, learners are presented with requests (e.g. accept cookies, link accounts), and they need to choose whether they would accept those or not. "To Use AI or Not?" presents learners with different scenarios (e.g. concept practice, communication practice), and asks students to indicate in which scenarios they would use an AI system like a chat bot. Avoiding Online Traps presents learners with different types of digital content (e.g. algorithm-curated news feeds), and they are asked whether they believe there are valid reasons to question the information presented, whether they believe it is important to seek out diverse perspectives, or whether they think it is safe to accept the information provided.
Access and Use	Productivity Tools asks students to demonstrate how to perform different quick actions using media platforms and AI systems (e.g. use the calendar tool to schedule an appointment, use the email tool for sending a message, use system tools for organising their assignments in different subject folders). Digital Declutter asks students to organise and streamline a disorganised collection of digital files by sorting them into clearly labelled folders, removing unnecessary items, and/or efficiently using an online file storage app or service to manage their documents and resources. Accounts/Privacy Settings tasks students with configuring and updating their digital accounts and privacy options considering how different settings could affect personal information and online presence.
Analyse and Evaluate	Flag the Ad/AI presents learners with different images, and they are asked to determine whether they are advertisements or not, or whether they are AI-generated or not explaining their reasoning in a short-constructed response. Further, students need to provide a justification for their choice. Lateral Reading asks students to look across sources to evaluate consensus and the source quality and bias of promising sources (e.g. searching for information about author expertise and funding sources or using reverse image search tools to verify the authenticity of a photograph circulating online). Reality and Modelling asks students to identify the gap between the representing model and the reality it aims to represent. For instance, analysing how AI-generated media can distort perceptions of real events, how different media headlines compare to the actual content of news stories, or explaining which representation is a useful simplification and which might be misleadingly oversimplified.

MAIL Competence	Short Task Example(s)
Participate and Collaborate	> **Give Feedback** presents learners with quick scenarios in which they are asked to provide constructive feedback to peers. > **Media & AI Advisor** asks students to provide advice to different types of social relations (e.g. peers, teachers, family) on which uses of media platforms and AI systems are more or less risky for their well-being. > **Group Chat Collaboration** tasks students with actively engaging in group discussions contributing ideas, responding thoughtfully, and/or navigating challenging conversational dynamics to complete collaborative tasks.
Create	> **Personal/Professional Profile** tasks students with selecting digital content and/or updating digital profiles considering whether they are meant to be curated for personal or professional purposes. > **Media Editor** tasks students with editing and/or enhancing digital content (e.g. adding annotations or stickers) using different media platforms for different purposes and/or audiences. > **Meme Creation** asks students to use image or video editing tools to produce new messages by adding text, adjusting colours, or incorporating stickers, demonstrating creativity in digital communication.



5.1.5. Difficulty Drivers >

The effectiveness of the assessment in measuring the different levels of competences will depend on a clear of understanding of how different task elements contribute to the complexity of the item. Therefore, below are key drivers of difficulty that could affect performance in the assessment:

- **Complexity of the context and the purpose:** Embedding tasks in novel or multifaceted real-life scenarios increases the cognitive load for some students and makes it harder for them to identify the appropriate way to solve the task.
- **Diversity of media types:** Engaging with unfamiliar, complex, or multiple media formats could be challenging for some students as it requires more flexibility and broader understanding of what a particular task requires.

- **Variety of tools and platforms**: Navigating different or novel interfaces and functionalities across a range of media platforms and AI systems increases the operational complexity of the task making it harder for some students to complete the task.
- **Demand for higher-order thinking processes**: Higher-order tasks – for example longer critical analysis tasks, require deeper understanding and more advanced skills from students than basic recognition tasks – for instance shorter tool selection tasks, which raises the difficulty of the assessment.
- **Open-ended responses**: Tasks that require students to write, create a video or other digital artefacts require more effort, and are thus expected to be more difficult than tasks with a multiple-choice format.
- **Authenticity and realism of the scenarios**: The more realistic and contextual rich the scenario, the more the need for adaptive problem-solving during the assessment, as tasks with real-life scenarios would mirror actual digital challenges that present unpredictable variables.
- **Ambiguity of task instructions**: Less structured tasks with open-ended goals make it harder for some students to determine how to complete the tasks, making it uncertain and more difficult.
- **Amount of support and guidance**: Minimal scaffolding, hints, or feedback throughout the assessment requires greater independence and problem-solving, making it harder for some students.

Questionnaire

In an increasingly complex digital ecosystem (Fosco et al., 2022[6]), understanding not only what students know or do, but how they think and what attitudes they hold, is an essential component of a comprehensive MAIL assessment. Therefore, it is important to assess student attitudes towards these tools and systems, their perceptions of risks and opportunities related to their well-being, their exposure to media and AI instruction at school, along with their own practices and preferences related to media and AI use (Hilbert, 2020[2]). Their inclusion acknowledges that 21st-century readiness is not only confined to technical and/or cognitive skills but also includes the mindsets and dispositions that enable students to think critically, act responsibly, and adapt to change. **Table 5.2** provides examples of questionnaire constructs or scales that could be included in this PISA assessment.

These questionnaire scales complement the evidence from the cognitive test and provide a multidimensional framework for better understanding students' media and AI competences. The PISA student and school questionnaires will also include scales designed to measure the opportunities students have to practice media and AI literacy in the classroom.

Table 5.2. Examples of Questionnaire Constructs by MAIL Competence

MAIL Competence	Questionnaire Construct Example(s)
Reflect and Act Ethically and Responsibly	**Actively Open-Minded Thinking** is the disposition to consider alternative viewpoints, to seek out evidence that may contradict their own beliefs, and to be willing to revise opinions considering the new information acquired (Stanovich and Toplak, 2023[117]). **Attitudes towards AI** are students' perceptions, beliefs and emotional responses to AI and its role in society (Ng et al., 2023[118]).
Access and Use	**Media Literacy Exposure** is the degree to which students are exposed to educational opportunities and resources aimed at developing their ability to critically analyse, evaluate and create media (Hobbs and Frost, 2003[119]). **AI Literacy Exposure** is an emerging construct that reflects students' opportunities to learn about artificial intelligence-its principles, applications, and implications (Zhong and Liu, 2025[120]). **Digital Privacy-Protection Strategies** are the skills, knowledge, and behaviours that individuals employ to safeguard their personal information in digital spaces (Buchanan et al., 2006[121]).
Analyse and Evaluate	**Misinformation Susceptibility** assesses an individual's vulnerability to false information (Maertens et al., 2023[122]). **Manipulation Susceptibility** assesses an individual's vulnerability to believing misleading statements that are not explicitly false (Maertens et al., 2023[123]). **Digital Dependence** assesses the extent to which individuals rely on digital devices, platforms, and services in their daily lives (Stoilova, Livingstone and Kardefelt-Winther, 2016[124]).
Participate and Collaborate	**Media Participation** refers to the ways in which students actively engage with media, not just as passive consumers but as creators of digital content, participating in online discussions, and engaging in digital activism (Stoilova, Livingstone and Kardefelt-Winther, 2016[124]). **Digital Risks and Harms** focuses on the adverse effects and dangers associated with digital engagement that could range from exposure to inappropriate or harmful content, cyberbullying, misinformation and digital addiction to more subtle risks such as privacy breaches and data misuse (Buchanan et al., 2006[121]).
Create	**Media Preferences** are the types of media students choose to consume or interact with, including preferences for different platforms, genres, formats and sources (Stoilova, Livingstone and Kardefelt-Winther, 2016[124]). **Media Practices** refers to the routines, habits, and behaviours students exhibit when interacting with media, like the amount of time spent online, the kinds of activities undertaken, the balance between consumption and creation, and the adoption of safety and privacy practices (Stoilova, Livingstone and Kardefelt-Winther, 2016[124])

5.2. An Example Task

5.2.1. Overview of the Task >

The following exemplar scenario focuses on assessing the credibility of information sources – a common and authentic context for demonstrating Media and AI Literacy. In this role-play, students act as journalists who must access, analyse, and evaluate information from multiple sources, possibly also engaging with media creation or ethical decision-making. This example helps visualise the nature of the assessment tasks, which may vary in focus, length and complexity.

↳ Task Assignment

First, students receive a trending piece of news – or novel information – and are asked to analyse the media message. In this example, the student is told it is important to verify the information so that the newspaper company has enough evidence to decide whether to publish it. **Figure 5.1** shows what the notification badge could look like on the homepage of the chat tool in a simulated desktop environment.

Figure 5.1. Example of Chat Tool Notification Badges

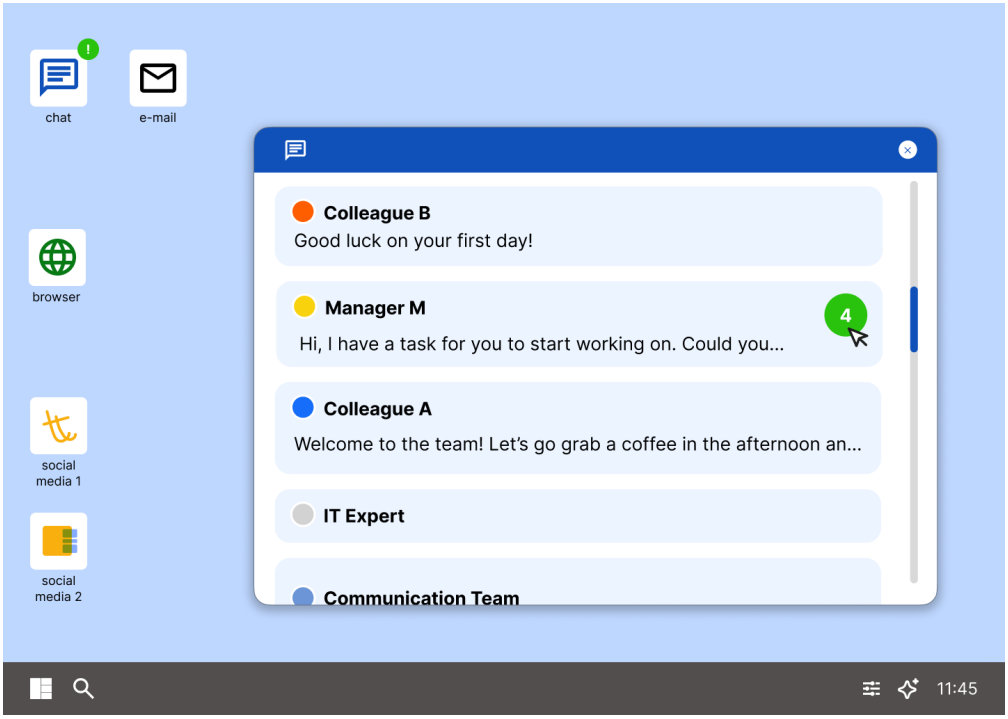
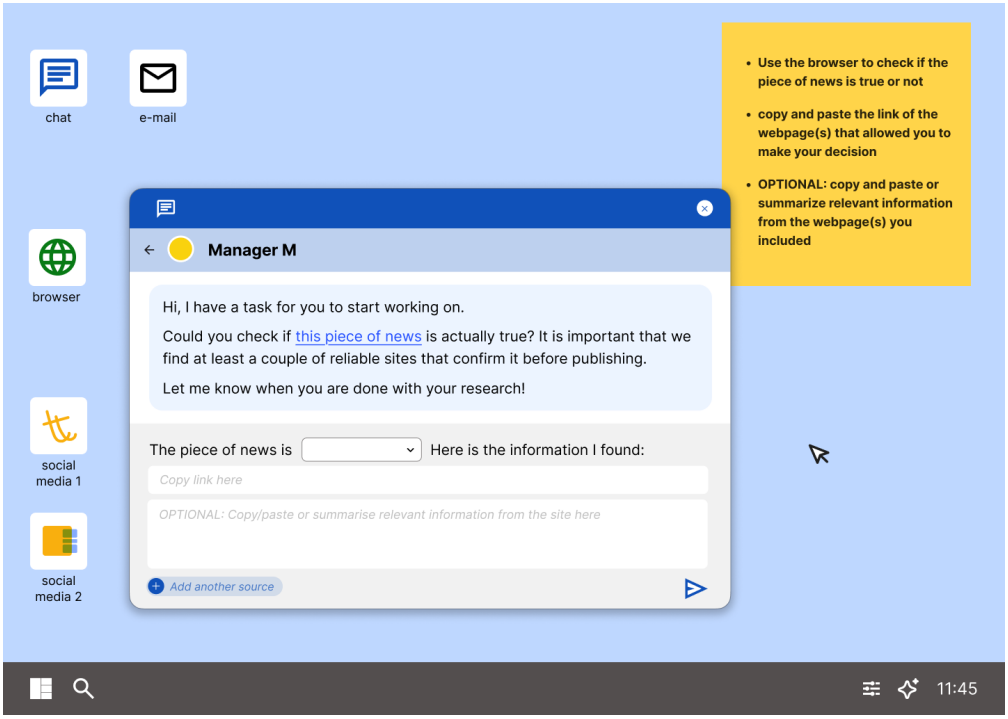


Figure 5.2 shows what the message could look like once the student opened the chat. Here, the manager shares the piece of news including some context and an embedded link. Next to the manager's message, the students find a list of the actions that they are expected to complete to solve the task successfully. These could be included to provide some additional guidance to students.

The bottom of the chat tool features a message builder, in which students complete the message by (a) selecting whether the news is accurate, partially accurate, or inaccurate; (b) providing the URL of one, or ideally more, online sources they consulted and that support their claim; (c) including relevant information found online that helped the student make the judgment. Students could use "+ Add Another Source" to add more than one of the sources they consulted.

Figure 5.2. Example of Message with Task Instructions from the Chat Tool



↳ Lateral Reading

Students are also expected to analyse the piece of news shared by the manager by consulting different online sources. This phase represents the core of the lateral reading task. Here, students must use the browser tool to search for information to confirm whether the piece of news is true. In the implementation of this task for PISA, it is likely that students will not be given access to the real Internet but instead to a simulation. To begin their research, the student should first have a look at the piece of news that was shared by the manager. **Figure 5.3** shows that, after clicking on the embedded link in the message, students view the news sent by their manager open in a new window in the Browser tool.

Then, students – ideally – start searching for additional information from other sources. This should help them decide, for instance, whether the information is (a) accurate, current and complete; (b) partially accurate, current and complete, or (c) inaccurate, outdated and incomplete. Moreover, students also ideally consider the authority, credibility, and purpose of (a) the source of the news, and (b) the sources they choose to consult during their own research. **Figure 5.4** shows an example of what it could look like when students type keywords in the Browser tool.

Figure 5.3. Example of Website in the Browser Tool with News to be Analysed

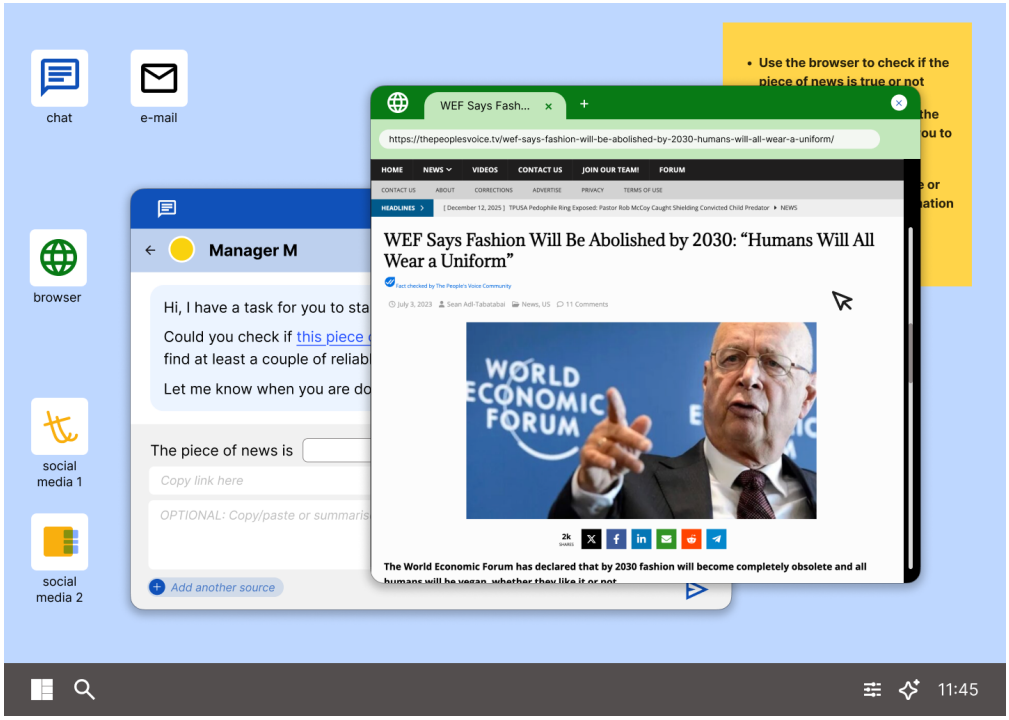


Figure 5.4. Example of New Tab in Browser Tool with Student Keywords

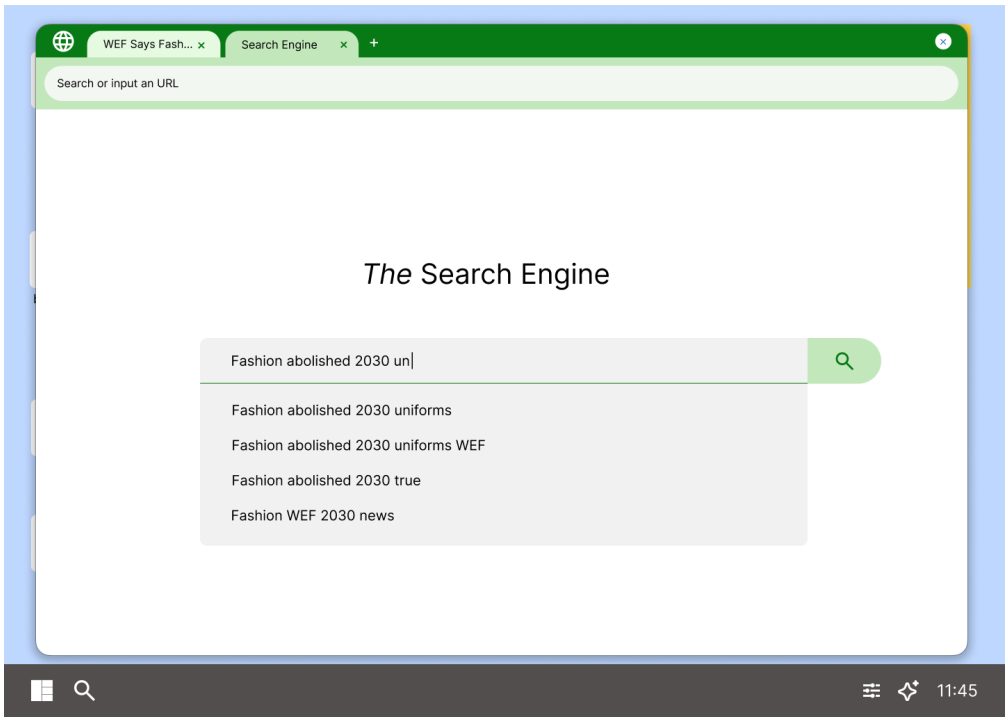


Figure 5.5 shows the list of websites students obtain from their search query – in the same way as they normally would when conducting a search on a real browser, each of these results are active links they could choose to consult to analyse the claim.

Keeping in mind the functionality and realistic feel of the tools, **Figure 5.6** shows that when clicking on one of the results, a new tab automatically opens and students read its content. Ideally, the simulated environment will include webpages with different content and layout; some with information about the author of the content, some with details about the source itself (e.g. online journal, well-established blog), considering some students might go further searching about the source's credibility.

Figure 5.5. Example of Search Results Page in Browser Tool

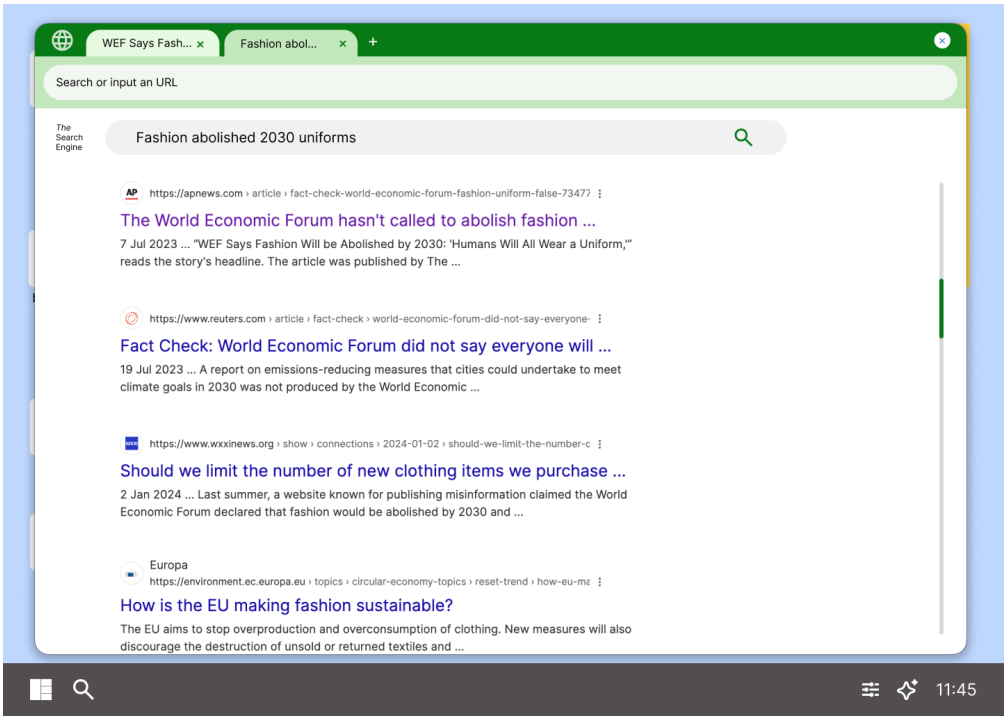
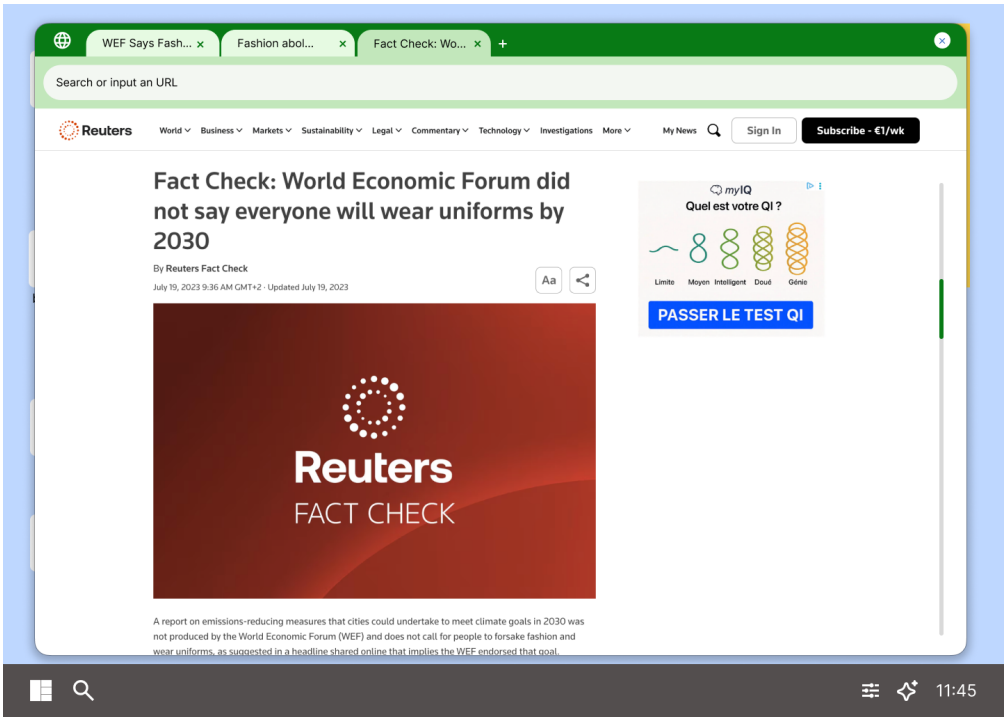


Figure 5.6. Example of Multiple Tabs Showing Different Webpages in Browser



↳ Response Submission

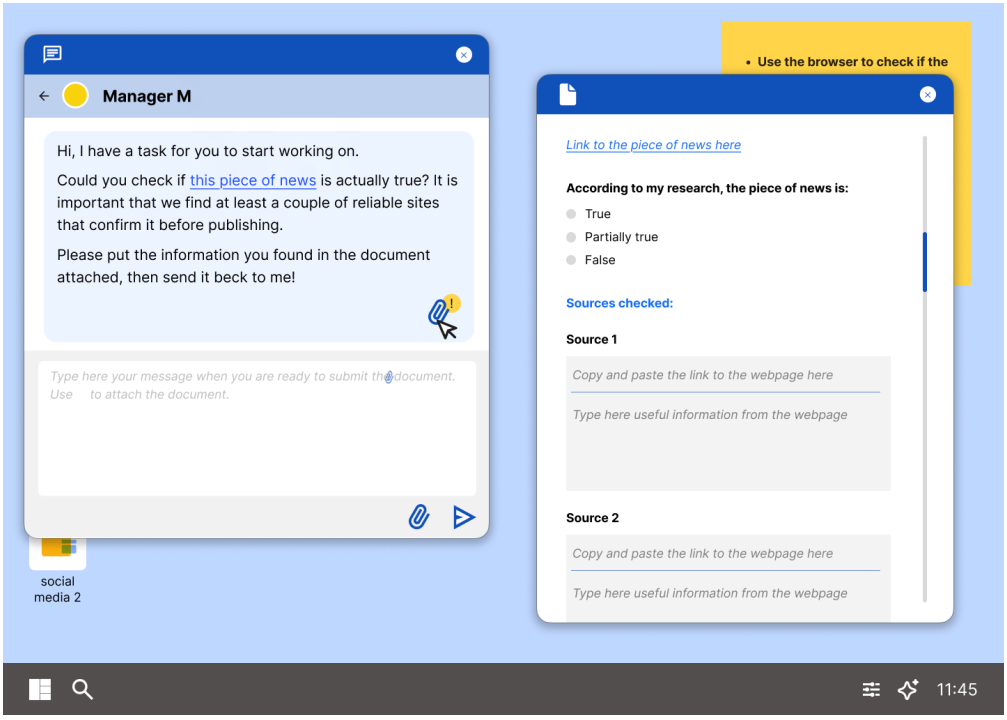
Lastly, after having checked different sources, and feeling confident in their judgment, students submit the results from their analysis (e.g. searching the author of the articles and/or websites) to the manager that assigned them the task, alongside the relevant evidence that helped them make the decision.

As described before, students submit their response and supporting sources through the chat tool (see **Figure 5.2** for original example). However, **Figure 5.7** shows an alternative response submission in which, instead of crafting a message with their response, students could be asked to download a pre-formatted document with a specific response structure (i.e. media claim verification steps), which they would have to complete and then send back as attachment in their response message. Using this alternative modality would allow for evidence of students' ability to download and locally save content (e.g. access and engage competency) and to send digital content to others (e.g. participate and collaborate competency).

The students are thanked for their help during the task and told that they should be certain of their responses as this will impact the reputation of the newspaper company. If students want to move forward in the assignment, they can click on a "Next" button, which would move them to the next task. If students want to check their response further, they could indicate so by clicking, for example, an "I need more time" button.

Lastly, after this media-heavy task, students could be asked to create a social media post requiring them to use a simulated AI system (e.g. to prompt a picture or to polish a social media caption).

Figure 5.7. Example of Alternative Delivery of Response Submission



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