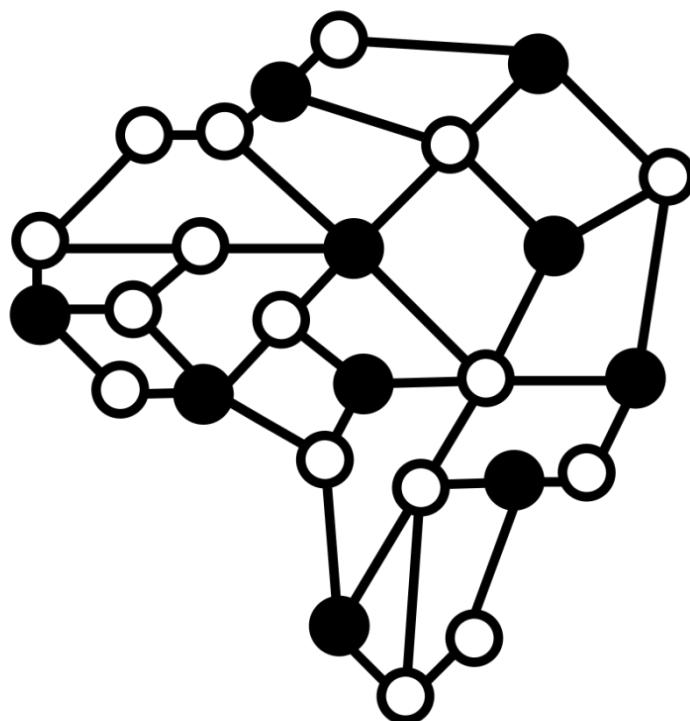


## Algorithmic Literacy & Transparency Competencies

Portrait of Skills Referential  
EU/BE/FR/NL



## EXECUTIVE SUMMARY

This report presents the results of a benchmarking exercise conducted as part of the ALGO-LIT project, which aims to advance algorithmic literacy and transparency across the European Union. Focused on Belgium, France, and the Netherlands, the project targets digital inclusion workers, civil servants, social workers, and activists, with the goal of equipping them, and the citizens they support, with the necessary knowledge and tools to understand, question, and act upon algorithmic decision-making systems.

⊕ At the heart of this analysis is the recognition that **algorithmic literacy** is a key enabler of **effective transparency**. Algorithmic literacy is defined not only as awareness of algorithmic presence in everyday platforms and services, but also as the ability to critically evaluate and strategically engage with these systems. Transparency, in turn, is understood as more than disclosure, it involves explainability, accountability, and the empowerment of individuals and communities to contest and reshape algorithmic decisions.

The benchmarking maps and evaluates a range of twelve digital competence frameworks, trainings, and assessments, applying a structured methodology built around ten dimensions. These include governance models, purpose, accessibility, and most importantly, their contribution to algorithmic literacy and transparency, from raising awareness, to fostering critical thinking, and supporting emancipatory uses of AI.

Portraits of Frameworks		Algorithmic Literacy & Transparency Dimensions			
Skills Frameworks	European/Public Institutions Academia / Research Consortia Grassroots / Digital Inclusion Bodies Standardization Bodies	Raise awareness that algorithms are involved in a given situation	Raise interest in getting further information on algorithms	Support the audience in developing a critical standpoint towards algorithms	Support the audience into using algorithms for their own means/objectives
		DigComp 2.2			
		AILit Framework (draft)			
		Pix : AI and algorithms in modules			
		IT Academie Overheid: E-learning: Non-discriminatie in algoritmes en data			
		Human rights impact assessment for the use of algorithms ('IAMA')			
		Elements of AI			
		De Nationale AI-Cursus			
		Lire et Ecrire			
		Café IA training			
		Algo-Literacy for all: CrossOver Project			
		Culture Numérique Occitanie: AIG training			
		AFNOR			

⊕ **Key findings:** The results show a marked contrast between institutional and standardization bodies frameworks (e.g., DigComp 2.2, AILit, Pix, AFNOR) and civil society or practitioner-led initiatives (e.g., Lire et Ecrire, Café IA, CrossOver). While institutional tools tend to frame algorithmic literacy in terms of technical comprehension and safe digital use, often tied to employability. Grassroots initiatives on the other hand emphasize real-world relevance and democratic accountability. These bottom-up approaches actively link digital practices to broader issues such as power asymmetries, access to rights, and social justice.

Despite increased attention to ethics and regulation, many frameworks fall short in translating legal principles into actionable competencies. Few meaningfully address environmental sustainability, alternative governance models, or the transformative potential of digital tools. The most critical gap lies in the absence of structured opportunities for learners to develop a critical standpoint, challenge systemic bias, and imagine alternative, citizen-led algorithmic futures.

This report calls for a shift in the development of digital frameworks: from purely functional or institutional visions to approaches that embed algorithmic literacy and transparency as levers for emancipation and autonomy.

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## INTRODUCTION

This report introduces the findings of a benchmarking exercise aimed at identifying existing skills frameworks in the European Union with a particular emphasis on AI and algorithmic competencies. This document is intended to identify, define, and clarify the dimensions of algorithmic knowledge embedded within current competency frameworks. The objective is also to critically assess the limitations of existing frameworks, thereby contributing to the identification of gaps and informing the development of new competency models. Ultimately, this involves supporting the design of training programs that embed a strong focus on both algorithmic literacy and transparency.

### The ALGO-LIT project

We conducted the benchmark as part of the [ALGO-LIT project](#) - algorithm literacy for effective transparency in the EU. The project aims to map, connect, train and equip digital inclusion workers and other similar practitioners on the topic of algorithm literacy in France, Belgium and the Netherlands, enabling them to support citizens, including the most vulnerable, in understanding algorithmic decisions and effectively exercising their right to transparency.

This action-research methodology will document the needs and practices of digital inclusion workers in the field of algorithmic literacy and transparency; share practices and train these workers; co-construct and adapt tools with the community; promote and institutionalise skills in the field of algorithmic literacy and transparency across the EU. The project is co-funded for three years by an EU Erasmus+ grant cooperative partnership (Dec 2024-Dec 2027).

Audience of ALGO-LIT  
digital inclusion workers,  
civil servants, social workers,  
activists

This document is the result of the collective efforts of the four project partners in spring 2025: Fari - AI for the Common Good Institute, Dataactivist, la Mednum and Waag Futurelab. The project is co-funded for three years by an EU Erasmus + grant "cooperative partnership" (Dec 2024-Dec 2027).

*Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the French Erasmus + Agency. Neither the European Union nor the granting authority can be held responsible for them.*

## ANALYTICAL FRAME

### Scope

The scope of the benchmarking exercise is restricted to Belgium, France, and the Netherlands, and includes the identification of relevant European-level and international frameworks to enable comparative analysis. This analysis does not intend to be comprehensive but to provide an illustrative list for each country against international standardized approaches. Furthermore, our research indicates that numerous existing frameworks draw heavily on a common foundation, primarily the DigComp 2.2 framework. In Belgium alone numerous digital barometers across Wallonia, Flanders and Brussels (e.g. [Fondation Roi Baudouin barometer of digital inclusion 2024](#), [imec.digimeter 2024](#), [Digital Wallonia barometer 2023](#)), trainings (e.g. [123digit platform](#)) and certifications (e.g. [TOSA](#)) rely on the DIGCOMP 2.2. In this context, we conducted a comparative analysis between foundational frameworks and those produced in the three countries by digital inclusion professionals, with the aim of capturing how these skills are lived, understood, and mobilized in the everyday practices of field actors. In order to frame literacy skills in the context of algorithms and AI, the benchmarking exercise includes the following typologies: skills referential, assessments and training. A structured keyword search was employed, complemented by a snowballing approach to capture relevant documents referenced or linked within the identified web resources (cfr Appendix 1: Search strategy and key words used in search engines.).

### Algorithmic literacy

The concepts of algorithmic literacy in this study are grounded in the work of [Oeldorf-Hirsch, 2021](#). First as “*the capacity and opportunity to be aware of both the presence and impact of algorithmically-driven systems on self- or collaboratively-identified goals, and the capacity and opportunity to crystallize this understanding into a strategic use of these systems to accomplish said goals*” ([DeVito, 2021: 3](#)). And second as “*being aware of the use of algorithms in online applications, platforms, and services, knowing how algorithms work, being able to critically evaluate algorithmic decision-making as well as having the skills to cope with or even influence algorithmic operations*” ([Dogruel et al., 2021: 4](#)).

These elements have been synthesized in our analysis as outlined below to identify how the respective framework do contribute to algorithmic literacy & transparency by:

- raise awareness that algorithms are involved in a given situation,
- raising interest in getting further information on algorithms,
- supporting the audience in developing a critical standpoint towards algorithms,
- supporting the audience into using algorithms for their own means/objectives.

With reference to Point 3, “*developing a critical standpoint towards algorithms*,” this section examines the notion of critically evaluating algorithmic decision-making. We draw on the work of the [CESE, 2025](#), [Vincent-Lancrin, S. et al. \(2019\)](#), and [Kitchin, \(2016\)](#). This report therefore considers the following dimensions when assessing the capacity to develop a critical standpoint towards algorithms: the ability to **understand, inquire, demand and imagine**.

## UNDERSTAND

How do algorithms function on a technical level, including data input, training processes, and decision-making logic?

In what ways are algorithms shaped by the values, choices, and objectives of their designers, and why can they not be considered neutral?

How are algorithms embedded within broader social, economic, and environmental systems?

What power dynamics and infrastructures, such as data ownership, cloud platforms, and access to computational resources, underpin the development and deployment of AI?

## INQUIRE

Who owns, builds, and deploys the algorithm and for what purpose?

Whose interests are being served: private profit, surveillance objectives, or the public good?

What biases or exclusions are being reinforced (e.g., racism, classism, ableism)?

In what ways do algorithmic decisions influence the daily lives of marginalized or vulnerable groups?

## DEMAND

How can we ensure transparency in algorithmic systems, particularly in making clear how they function and why specific outputs are produced?

What mechanisms should be in place to allow individuals or communities to challenge or rectify algorithmic decisions that are unjust or harmful?

What kind of democratic oversight frameworks are needed to regulate the design and deployment of impactful AI systems?

How can we create and sustain inclusive public spaces that allow civic actors and communities to be informed about and actively participate in algorithmic governance?

## IMAGINE

How to support alternative AI models that are free, open, local, and co-designed with communities?

How can digital infrastructure be governed as a common good rather than as a source of private rent?

How can citizens and mediators be empowered to critically engage with algorithms and actively shape their development?

How can algorithmic systems be designed and used to serve emancipatory or liberating purposes?

## Algorithmic transparency

The case of algorithmic transparency is informed by the work of [Jobin et al., 2019:391](#), as “*References to transparency comprise efforts to increase explainability, interpretability or other acts of communication and disclosure. Principal domains of application include data use, human–AI interaction, automated decisions, and the purpose of data use or application of AI systems. Primarily, transparency is presented as a way to minimize harm and improve AI though some sources underline its benefit for legal reasons or to foster trust.*”.

In this framework, algorithmic literacy serves as a critical enabler of transparency, while transparency represents the desired outcome of comprehensible and justifiable algorithmic systems, literacy constitutes one of the means through which individuals can make sense of those systems, alongside openness and explainability. Effective transparency, understood as the capacity to foster accountability, depends not only on access to information (openness) but also on the ability to interpret and critically engage with it, which is precisely what algorithmic literacy aims to support.

### Towards algorithmic literacy & transparency: ten dimensions for unpacking digital competence frameworks.

Through a collective exercise we identified the ten dimensions to document each framework identified. The below outlined dimensions were selected to examine not only the origins and actors involved in the development of each skill referential, such as publishers, standardisation bodies, private companies, or public institutions (dimension 1 & 2) but also to assess its accessibility in terms of cost, language, and inclusivity (dimension 3), and to evaluate its potential contribution to advancing algorithmic literacy and transparency (dimension 5) as defined in the aforementioned paragraphs.

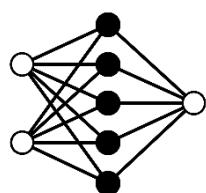
In addition, we considered the underlying purpose of each framework (dimension 4), in order to understand whether it aims primarily at enhancing employability, enabling civic participation, fostering critical thinking, or meeting institutional or commercial goals.

This analysis is conducted with particular attention to the needs of citizens and digital inclusion workers, in line with the ALGO-LIT project’s target audience (dimension 7 & 8). Also, a key distinction must be made between evaluating skills as technical proficiency in using digital tools, and assessing a deeper, reflective understanding of how algorithms work, including their social, ethical, and political implications (dimension 6).

Eventually, we examined the format in which each framework is presented and incorporated space to identify potential blind spots or areas where additional dimensions could be integrated (dimensions 9 & 10).

Number	Dimensions
Dimension 1	Which organisation did create the skill referential? e.g. publisher, standardisation body, etc
Dimension 2	Which organisations did contribute to the design of the skills referential? e.g. private companies, public bodies, lobbies, think-thanks, others?
Dimension 3	Accessibility e.g. price, language, foresee adjustments for disabled people?
Dimension 4	Purpose of the framework

Dimension 5	<p>How does the referential contribute to algorithmic literacy &amp; transparency? Select (one or several that apply):</p> <ul style="list-style-type: none"> <li>a. raise awareness that algorithms are involved in a given situation</li> <li>b. raise interest in getting further information on algorithms</li> <li>c. support the audience in developing a critical standpoint towards algorithms</li> <li>d. support the audience into using algorithms for their own means/objectives</li> </ul>
Dimension 6	Identification of skills assessed. e.g. assess skills on ability to use a tool and/or Assess skills to reflect and understand algorithms
Dimension 7	Scope: standardized (foundational framework, European level, Citizens at large) or tailored (specific audience cfr following dimension),
Dimension 8	Specific target audience: e.g. users/citizens, inclusion workers, professionals, civil servants, general audience
Dimension 9	Format: e.g. online, offline, self-assessment tool, workshop, etc
Dimension 10	Others e.g. blind spots, inspiring features, new dimensions to consider?



## PORTRAITS OF FRAMEWORKS

To understand the legitimacy, intent, and potential influence of each framework, we apply a clustering based on **institutional status and governance model**. This approach considers who develops, maintains, or owns the initiative; be it European or public institutions (created by EU or national public institutions), academic consortia (university-led or interdisciplinary research teams), digital inclusion (NGOs or inclusion focused organizations), or standardization bodies (official technical or industrial certifiers). The origin of a framework often shapes its normative orientation, target audience, and implementation scope. By analysing governance structures, we gain insights into power dynamics, accountability mechanisms, and the degree of openness to participatory design.

### European/Public Institutions frameworks

#### DigComp 2.2 The Digital Competence Framework for Citizens

**Reference:** [Vuorikari, DigComp 2.2 2022](#)

**Pin:** EU

**Developed by:** Joint Research Centre (JRC), European Commission

**Funders & Contributors:** ALL DIGITAL, European Computer Driving Licence (ECDL) Foundation, Council of European Professional Informatics Societies (CEPIS), DigComp community of practice (575 members)

**Target Audience:** all EU citizens (individuals aged 16-74), in support of the [Digital Education Action Plan \(2021-2027\)](#)

**Accessibility:** multiple translation, free, available online, adjusted for disabled people

**Purpose:** To support the objectives of the Digital Education Action Plan from the EU a.o. reaching a minimum of 80% of the population with basic digital skills and having 20 million ICT specialists by 2030:

- improve citizens' digital competence,
- help policy-makers formulate policies that support digital competence building plan education and training initiatives to improve the digital competence of specific target groups

**In a nutshell:** DigComp establishes a series of five areas of competences for which twenty-one skills are considered (cfr fig.1 The DigComp conceptual reference model). A proficiency level (foundation - intermediate - advanced - highly specialised) is listed for each skill, and a provision of examples of knowledge (concepts and facts), skills (ability to apply knowledge and use know-how) and attitude (values, aspirations and priorities) support the framework. Eventually use cases complement the examples listed with both an employment and learning scenario. A dedicated appendix on Citizens Interacting with AI Systems is provided, featuring 73 examples collected in response to comments received during public validation:

- a. What do AI systems do and what do they not do?
- b. How do AI systems work?
- c. When interacting with AI systems
- d. The challenges and ethics of AI
- e. Attitudes regarding human agency and control



fig.1 The DigComp conceptual reference model Reproduction of the DigComp 2.2 model.  
Reprinted from Vuorikari et al., 2022, p. 14, © European Union, 2022 2022 model

### How does DigComp 2.2 contribute to algorithmic literacy & transparency?

<input checked="" type="checkbox"/>	raise awareness that algorithms are involved in a given situation,
<input checked="" type="checkbox"/>	raise interest in getting further information on algorithms
<input checked="" type="checkbox"/>	support the audience in developing a critical standpoint towards algorithms
<input checked="" type="checkbox"/>	support the audience into using algorithms for their own means/objectives

### Supporting material: [DigComp-Based Assessment and Monitoring Tools](#)

**Legal Highlight on rights exercise:** Competence area 2. Communication and collaboration, skill 2.3 engaging citizenship through digital technologies, the framework highlights as knowledge example 69: “Knows that all EU citizens have the right to not be subject to fully automated decision-making (e.g. if an automatic system refuses a credit application, the customer has the right to ask for the decision to be reviewed by a person).” The document points to a European Commission page referencing the rights over personal data under the GDPR and how to exercise those.

## AILit Framework review (draft)

**Reference:** [OECD, 2025](#)

**Pin:** EU

**Developed by:** the European Commission, Organisation for Economic Co-operation and Development.

**Funders & Contributors:** Code.org and leading educational experts

**Target Audience:** Teachers, education leaders, education policymakers, and learning designers.

**Accessibility:** EN, free and available online (draft version)

**Purpose:** To invite educators and stakeholders (e.g. policymakers, teachers, educators, school leaders, NGO representatives, academics) to engage in a dialogue on the meaning of AI literacy and reflect on the evolution of teaching and learning in the age of AI. Builds on existing frameworks and aims at empowering learners on engaging with AI in a critical, ethical and creative manner.

**In a nutshell** The draft framework is articulated around four AI literacy domains for which twenty-two competences are considered (cfr fig.2 The AILit Framework conceptual reference model). A provision of examples of knowledge (technical and societal understandings), skills (critical thinking, creativity and computational thinking) and attitude (mindsets and dispositions) support the framework to illustrate how to engage with AI. Eventually for each competence, a learning scenario is provided for primary and secondary education.

### Engaging with AI

- (1) Recognize AI's role and influence in different contexts.
- (2) Evaluate whether AI outputs should be accepted, revised, or rejected.
- (3) Examine how predictive AI systems provide recommendations that can inform and limit perspectives.
- (4) Explain how AI could be used to amplify societal biases.
- (5) Describe how AI systems consume energy and natural resources.
- (6) Analyse how well the use of an AI system aligns with ethical principles and human values.
- (7) Connect AI's social and ethical impacts to its technical capabilities and limitations.

### Creating with AI

- (1) Use AI systems to explore new perspectives and approaches that build upon original ideas.
- (2) Visualize, prototype, and combine ideas using different types of AI systems.
- (3) Collaborate with generative AI systems to elicit feedback, refine results, and reflect on thought processes.
- (4) Analyse how AI can safeguard or violate content authenticity and intellectual property.
- (5) Explain how AI systems perform tasks using precise language that avoids anthropomorphism.

### Managing AI

- (1) Decide whether to use AI systems based on the nature of the task.
- (2) Decompose a problem based on the capabilities and limitations of both AI systems and humans.
- (3) Direct generative AI systems by providing specific instructions, appropriate context, and evaluation criteria.
- (4) Delegate tasks to AI systems to appropriately automate or augment human workflows.
- (5) Develop and communicate guidelines for using AI systems that align with human values, promote fairness, and prioritize transparency.

### Designing AI

- (1) Describe how AI systems can be designed to support a solution to a community problem.
- (2) Compare the capabilities and limitations of AI systems that follow algorithms created by humans with those that make predictions based on data.
- (3) Collect and curate data that could be used to train an AI model by considering relevance, representation, and potential impact.
- (4) Evaluate AI systems using defined criteria, expected outcomes, and user feedback.

fig.2 The AILit Framework conceptual reference Adapted from *AI Literacy Framework* (n.d.),  
<https://ailiteracyframework.org/>. ©

### How does AILit framework contribute to algorithmic literacy & transparency?

<input checked="" type="checkbox"/>	raise awareness that algorithms are involved in a given situation,
<input checked="" type="checkbox"/>	raise interest in getting further information on algorithms
<input checked="" type="checkbox"/>	support the audience in developing a critical standpoint towards algorithms
<input checked="" type="checkbox"/>	support the audience into using algorithms for their own means/objectives

**Supporting material:** Invitation to provide feedback on the May 2025 AILit Framework draft through the [Feedback platform](#) (closes on Augustus 31<sup>st</sup> 2025).

### AI and algorithms in various Pix modules

**Reference:** [Pix, 2022](#)

**Pin:** FR

**Developed by:** French State

**Funders & Contributors:** French State, Pix, European Commission

**Target Audience:** standardized for a general audience

**Accessibility:** FR/EN/NL, free, adjusted for disabled people

**Purpose:** Be able to self-assess my level of algorithmic literacy and effectively communicate or demonstrate my knowledge to others.

**In a nutshell:** The Pix repository identifies five areas of competences and subsequently sixteen digital skills (cfr fig.3 Pix conceptual reference model), the following proficiency levels are considered: beginner, autonomous, advanced, expert. The Pix repository includes a growing number of topics related to artificial intelligence and can be used to create customized learning pathways. These may focus exclusively on artificial intelligence or encompass broader areas of competence, such as algorithmics, programming, and data literacy:

#### Understanding and using AI systems

- day-to-day encounters with AI systems,

- AI/ML general knowledge,
- “Entering the digital world”

### AI and data literacy

- algorithms through spreadsheet formalising and visualizing

### AI and Algorithms

- robotics, algorithm design, programming



fig.3 Pix conceptual reference model  
Source: HELMo – *Cultivez vos compétences numériques avec Pix*, <https://www.helmo.be/fr/news/pix-cultivez-vos-competences-numeriques>

### Supporting material: Self-assessment tool for digital skills

#### How does Pix contribute to algorithmic literacy & transparency?

<input checked="" type="checkbox"/> raise awareness that algorithms are involved in a given situation, <input checked="" type="checkbox"/> raise interest in getting further information on algorithms <input checked="" type="checkbox"/> support the audience in developing a critical standpoint towards algorithms <input checked="" type="checkbox"/> support the audience into using algorithms for their own means/objectives
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IT Academie Overheid: E-learning:  
Non-discriminatie in algoritmes en data

#### Reference: [E-learning: Non-discriminatie in algoritmes en data, 2024](#)

Pin: NL

**Developed by:** [Dutch government - RijksAcademie voor Digitalisering en Informatisering Overheid](#)

**Target Audience:** Civil servants

**Accessibility:** NL, free and available online (access with a 'Pleio account' - a collaboration platform used by Dutch government - or login via civil servants training account)

**In a nutshell:** The training provides learnings on the meaning of non-discrimination and its significance in the development of data driven systems, on identifying bias, preventing illegal discrimination in systems as well as how poorly designed algorithms can harm certain groups. The training introduces the relevance of experts, such as ethicists and legal professionals, who help ensure that systems are fair and transparent. It encourages critical reflection and supports practical use through real-life scenarios.

**Purpose:** The e-learning aims to help government officials fulfil their duty as civil servants by exploring both the opportunities and the risks associated with the use of data and algorithms.

**How does the IT Academie Overheid: E-learning module “Non-discriminatie in algoritmes en data” contribute to algorithmic literacy & transparency?**

<input checked="" type="checkbox"/>	raise awareness that algorithms are involved in a given situation,
<input checked="" type="checkbox"/>	raise interest in getting further information on algorithms
<input checked="" type="checkbox"/>	support the audience in developing a critical standpoint towards algorithms
<input checked="" type="checkbox"/>	support the audience into using algorithms for their own means/objectives

Human rights impact assessment for the use of algorithms ('IAMA')

**Reference:** [Impact Assessment Mensenrechten en Algoritmes, 2021](#)

**Pin:** NL

**Developed by:** Dutch government (Ministry of Interior) and Utrecht University

**Target Audience:** Civil servants

**Accessibility:** NL, free available online

**Purpose:** This tool aims at supporting discussion and decision-making for public bodies. It enables an interdisciplinary dialogue for those responsible for the development and/or deployment of an algorithmic system to ensure that all relevant concerns are addressed at an early stage and in a structured manner. This tool aims at preventing an algorithm from being deployed too quickly while the consequences have not been properly considered, with the associated risks, such as those of negligence, legal ineffectiveness or infringement of fundamental rights.

**In a nutshell:** The IAMA considers three phases in the decision-making process of algorithms:

**Step 1 Preparation:** Identify why an algorithm is deployed and consider its relevant effects.

**Step 2 Input and Throughput:** Consider what the algorithm should entail, and which data will be used

- **Input:** Questions data source and particular data use
- **Throughput:** Questions the selection and operationalisation of an algorithm, and respective transparency.

**Step 3 Output, Implementation, and Oversight:** Covers how the output influences policy or decision-making, and how oversight over its use is exercised.

**How does the IAMA contribute to algorithmic literacy & transparency?**

<input checked="" type="checkbox"/>	raise awareness that algorithms are involved in a given situation,
<input checked="" type="checkbox"/>	raise interest in getting further information on algorithms
<input checked="" type="checkbox"/>	support the audience in developing a critical standpoint towards algorithms
<input checked="" type="checkbox"/>	support the audience into using algorithms for their own means/objectives

## Academic / Research Consortia frameworks

### Elements of AI

**Reference:** [Elements of AI, 2025](#)

**Pin:** EU, FIN

**Developed by:** University of Helsinki, MinnaLearn a training and coaching company,

**Funders & Contributors:** European Commission, Finnish Government, Sorbonne University

**Target Audience:** General audience, Citizens, students

**Accessibility:** +20 Language, free available online [A free online introduction to artificial intelligence for non-experts](#), certification requires payment.

**Purpose:** Demystify AI to a broad audience; certification is available upon completion (requiring payment for Building AI module) aiming at demonstrating or communicating one's level of knowledge to others.

**In a nutshell:** The Elements of AI is a self-paced online course designed to introduce learners to the fundamentals of artificial intelligence. Aimed at a broad audience, the course requires no prior knowledge of programming or advanced mathematics, making it accessible to individuals from various backgrounds. The curriculum covers key topics such as machine learning, neural networks, and the societal implications of AI, combining theoretical knowledge with practical exercises to enhance understanding. Upon

completion, participants receive a certificate, and those in certain regions may be eligible for academic credits. No skills frameworks are explicitly referenced upon building the elements of the AI course.

### How does Elements of AI contribute to algorithmic literacy & transparency?

<input checked="" type="checkbox"/>	raise awareness that algorithms are involved in a given situation,
<input checked="" type="checkbox"/>	raise interest in getting further information on algorithms
<input checked="" type="checkbox"/>	support the audience in developing a critical standpoint towards algorithms
<input checked="" type="checkbox"/>	support the audience into using algorithms for their own means/objectives

### Supporting material: [Community platform](#)

De Nationale AI-Cursus

#### Reference: [De national AI-Cursus, 2019](#)

Pin: NL

Developed by: [Lowercase Foundation](#), non-profit organisation operating at the intersection of education, technology and personal development.

Funders & Contributors: Lowercase Foundation, in collaboration with several Dutch universities

Target Audience: General audience

Accessibility: NL, Free access, available online

Purpose: Gain basic understanding of artificial intelligence, through the certificate effectively communicate or demonstrate my knowledge to others.

In a nutshell: National AI course is free and a practical introduction to AI. It is made of eight short modules, each focusing on a different core skill. The course combines theoretical and practical insights. Participants receive a certificate after completion.

- **Understanding AI basics:** what AI actually is, how algorithms and machine learning work, and how AI differs from traditional software.
- **Technical foundations:** the basics of machine learning and deep learning, how computers learn from data and how image recognition works..
- **Real-world applications:** How AI is already being used in everyday life, like at PostNL and Bol.com and what impact it is having across different sectors.
- **Hands-on AI skills:** how to use generative AI tools like ChatGPT and Copilot with tips on writing good prompts and being creative with the tools.
- **Ethical and social awareness:** the ethical and legal side of AI, including government regulation and the broader social impact
- **Future of work:** How AI is changing the job market and what skills people will need to stay ahead in an AI driven world.

## How does De Nationale AI-Cursus contribute to algorithmic literacy & transparency?

<input checked="" type="checkbox"/>	raise awareness that algorithms are involved in a given situation,
<input checked="" type="checkbox"/>	raise interest in getting further information on algorithms
<input checked="" type="checkbox"/>	support the audience in developing a critical standpoint towards algorithms
<input checked="" type="checkbox"/>	support the audience into using algorithms for their own means/objectives

### Grassroots / Digital Inclusion frameworks

Lire et Ecrire : Citoyens dans un monde numérisé : quels savoirs, quelles compétences

**Reference :** [Lire et Ecrire, 2024](#)

**Pin:** BE

**Developed by:** Lire et Écrire, not-for-profit organization for adult literacy, Belgium

**Funders & Contributors:** European Union, Fédération Wallonie Bruxelles, Lire et Écrire Communauté française

**Target Audience:** digital inclusion workers

**Accessibility:** FR, free and available online

**Purpose:** Analyse the social implications of the digitalisation of society; support reflection on the relationship between basic digital skills and individuals' ability to participate actively in all aspects of contemporary life; identify the essential digital skills - both practical and critical - required for autonomy in daily activities; and provide reference points for literacy professionals to support a critical approach to integrating basic digital skills into literacy training programs.

**In a nutshell:** The framework considers several dimensions of digital practices listed below. Yet, those are not intended to serve as a systematic list of skills or knowledge to be developed. The framework considers learning not as a linear sequence of steps, but as the outcome of lived experiences and encounters accumulated throughout a person's life. Therefore, it does not rely on the use of proficiency levels. A list of examples complements the highlighted dimensions in the framework; algorithms related practices are unpacked further respectively: To situate (oneself), Understand the digital world.

- **Authorize oneself to engage with the digital world**
- **To situate (oneself)**
- **To reflect, to question (oneself), to inquire**
- **Build together**
- **Understand the digital world**
- **Create – Act – Transform**
- **Listen – Talk**

- **Read – Write**
- **Information and Communication Technology**
- **Mathematics**
- **Artistic Practices**

### To situate (oneself)

I situate myself within the power dynamics inherent in digital culture.

I observe that certain companies dominate the online market, thereby limiting my choices as a consumer.

I notice that online search results are often influenced by algorithms, which can shape my perception of reality.

I witness instances of online harassment, where some individuals seek to exert power over others.

### Understand the digital world

I use digital technologies to better understand the world:

- I read an article about online security and take notes on my impressions.
- I watch a documentary about how algorithms work.

### How does the Lire et Ecrire framework contribute to algorithmic literacy & transparency?

<input checked="" type="checkbox"/>	raise awareness that algorithms are involved in a given situation,
<input checked="" type="checkbox"/>	raise interest in getting further information on algorithms
<input checked="" type="checkbox"/>	support the audience in developing a critical standpoint towards algorithms
<input checked="" type="checkbox"/>	support the audience into using algorithms for their own means/objectives

**Supporting material:** “[La Roue](#)” toolbox as a practical illustration of the dimensions addressed by the Lire et Ecrire framework.

“Café IA” training for digital inclusion workers

**Reference:** [Mednum, 2024](#)

**Pin:** FR

**Developed by:** La Mednum, national cooperative organisation for digital inclusion and mediation, France **Funders & Contributors:** ANCT, CNNum, Les Assembleurs, Fréquence Écoles

**Target Audience:** French digital inclusion workers who have already completed the Conseiller Numérique training or hold the corresponding title.

## Accessibility: Free for digital inclusion workers

**Purpose:** Facilitate an AI Café workshop using appropriate mediation techniques and educational resources. By the end of the training, you should be able to: Understand and articulate the key issues and challenges related to AI; Engage in informed discussions about the societal impacts of AI and relate them to personal contexts; Provide your audience with the essential knowledge they need to form their own opinions and take action on AI-related topics.

**In a nutshell:** The training is focused on developing the skills needed to critically reflect on and understand algorithms. It is titled "*Supporting My Audiences in Facilitating a Café IA Using Mediation Techniques and Adapted Educational Resources.*" Below skills are considered in this framework:

### KNOWLEDGE (concepts, environment, context).

- Be able to identify the points of convergence and divergence between the human mind and AI
- Be able to distinguish the historical elements that enabled the emergence of AIs
- Be able to measure the stakes involved in AIs

### KNOW-HOW (practical skills, carrying out a task)

- Be able to explain in simple terms the history, functioning and issues surrounding AIs
- Be able to debate the uses of AIs in society, and put them into perspective with personal situations
- Be able to prescribe reasoned uses of these new tools

### KNOW-HOW (psychosocial and behavioural skills)

- Be able to give audiences the keys to position themselves and take informed action on the topic of AI
- Be able to adopt a critical standpoint and support users in this respect
- Be able to adopt a facilitative posture in a debate setting

## How does the “Café IA” contribute to algorithmic literacy & transparency?

<input checked="" type="checkbox"/>	raise awareness that algorithms are involved in a given situation,
<input checked="" type="checkbox"/>	raise interest in getting further information on algorithms
<input checked="" type="checkbox"/>	support the audience in developing a critical standpoint towards algorithms
<input checked="" type="checkbox"/>	support the audience into using algorithms for their own means/objectives

**Supporting material:** face-to-face workshop of 2 x 7 hours + 3h of remote work with available resources ([schedule here](#)).

## CrossOver Project: ALGO-LITERACY FOR ALL

**Reference:** [Savoir Devenir, 2023](#)

**Pin:** FR

**Developed by:** [EU DisinfoLab \(BE\)](#) independent NGO based in Brussels and focused on researching and tackling sophisticated disinformation campaigns targeting the EU, its member states, core institutions, and core values, [Check First \(FIN\)](#) software and methodologies start-up that helps journalists, citizens and policy makers fight disinformation all around the globe, [Apache \(BE\)](#) independent news outlet in Dutch, [Savoir Devenir \(FR\)](#) NGO aiming at empowering citizens through a better understanding of their online presence.

**Funders & Contributors:** European Commission

**Target Audience:** Digital Inclusion workers

**Accessibility:** FR/EN, free, available online [PREBUNKING-KIT-FR.pdf](#) [PREBUNKING-KIT-ENG.pdf](#)

**Purpose:** The framework aims at understanding algorithms, critically analysing them, and developing the ability to interpret and use them.

In a nutshell The CrossOver project considers the following five algo-literacy competencies when exploring the main impacts of algorithms on information and disinformation, it additionally provides four modules of Media and Information Literacy namely: The Keyboard Fighters/ Dangerous Liaisons/How Data Changed my Job as a Journalist/Algorithm Watchers.

- Understand algorithms
- Being able to analyse and criticize them
- Know how to use them wisely
- Modify our behaviors and uses with full knowledge of the facts
- React to them on social and mass media

**How does the ALGO-LITERACY FOR ALL framework contribute to algorithmic literacy & transparency?**

<input checked="" type="checkbox"/>	raise awareness that algorithms are involved in a given situation,
<input checked="" type="checkbox"/>	raise interest in getting further information on algorithms
<input checked="" type="checkbox"/>	support the audience in developing a critical standpoint towards algorithms
<input checked="" type="checkbox"/>	support the audience into using algorithms for their own means/objectives

**Supporting material:** [podcast and quiz](#)

## Culture Numérique Occitanie: AI training for social workers on AIG

**Reference:** [Formation Intelligence Artificielle Générative | Culture Numérique Occitanie](#)

**Pin:** FR

**Developed by:** Culture numérique Occitanie, organisation delivering activities, training and digital mediation to citizens.

**Funders & Contributors:** Culture numérique Occitanie

**Target Audience:** Digital inclusion workers

**Accessibility:** FR, Hybrid training, requiring payment

**Purpose** This framework aims at facilitating the work of social workers

**In a nutshell:** This one-day training program is designed to familiarize social workers and digital inclusion professionals with the practical applications of generative AI in their daily work. The course covers foundational concepts of generative AI, including its functionalities, benefits, and limitations, and provides hands-on experience with tools like Chat de Mistral. Participants engage in interactive workshops to learn how to formulate effective queries, assess information reliability, and create personalized content such as reports and visual materials. The training also addresses ethical considerations, aiming to equip professionals with the skills to use AI responsibly and effectively in their roles. The following skills are considered:

- Understand how generative AI works
- Identify various types of generative AI and their respective areas of application
- Use AI to create personalized content tailored to the needs of specific audiences
- Support audiences in their learning journey with the use of AI
- Foster creativity and self-expression among audiences with the use of AI

**How does the Culture Numérique Occitanie module on AIG contribute to algorithmic literacy & transparency?**

<input checked="" type="checkbox"/>	raise awareness that algorithms are involved in a given situation,
<input checked="" type="checkbox"/>	raise interest in getting further information on algorithms
<input type="checkbox"/>	support the audience in developing a critical standpoint towards algorithms
<input checked="" type="checkbox"/>	support the audience into using algorithms for their own means/objectives

**Supporting material:** [next training in 2025](#)

## Standardization Bodies framework

### AFNOR : Artificial Intelligence Competence Evaluation Test

**Reference :**[AFNOR, 2024](#)

**Pin:** FR

**Developed by:** Association française de normalisation (AFNOR)

**Funders & Contributors:** mix of companies, public services, associations, NGOs

**Accessibility:** free, available online [AFNOR Spec AFNOR SPEC 2401](#)

**Target Audience:** social workers, receptionists, administrative staff, counsellors, animators and mediators acting as digital inclusion workers

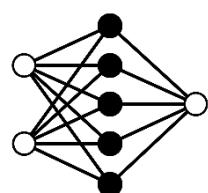
**Purpose:** To design tests to measure the public's knowledge of AI. A self-assessment test for evaluating algorithmic literacy complements the framework aiming at demonstrating or communicating one's level of knowledge to others.

**In a nutshell:** The framework identifies five areas of competences and considers the following proficiency levels: acculturation, advanced, expert. The AICET is a standardized methodology for designing tests to assess the public's knowledge of AI. It provides a structured approach for formulating specific questions and tasks that evaluate varying levels of AI competency.

- **Theoretical dimension of AI:** fundamental knowledge of artificial intelligence (AI), including its theoretical principles, underlying mathematical models, algorithms and key concepts
- **Application dimension of AI:** concrete areas of AI application in everyday life, providing real-life examples.
- **Operational dimension of AI:** practical implementation of AI, including data structuration, programming AI algorithms, AI life cycle, the use of specific libraries and the operational skills needed to develop and deploy AI systems
- **Legal and ethical dimension of AI:** national and international laws, standards and regulations related to AI, as well as ethical issues such as data confidentiality, intellectual property and liability.
- **General knowledge dimension of AI:** personalities and entities that have made significant contributions to AI, including pioneers, women in the field, innovative companies and researchers who have made important advances in the field.

### How does the AFNOR framework contribute to algorithmic literacy & transparency?

<input checked="" type="checkbox"/>	raise awareness that algorithms are involved in a given situation,
<input checked="" type="checkbox"/>	raise interest in getting further information on algorithms
<input checked="" type="checkbox"/>	support the audience in developing a critical standpoint towards algorithms
<input checked="" type="checkbox"/>	support the audience into using algorithms for their own means/objectives



## KEY FINDINGS

In this benchmarking exercise, we distinguish between frameworks and tools developed and implemented by civil society organizations on one hand, and those created by European or public institutions, standardization bodies, and academic consortia on the other hand.

### Institutional reach and grassroots depth

Both the AILit framework and DigComp 2.2 are intentionally broad in scope, as they are designed to serve as foundational knowledge bases upon which more context-specific or practice-oriented referential can be developed. Rather than prescribing detailed competencies for particular professions or use cases, these frameworks establish general principles, core areas of competence, and high-level descriptors intended to guide the creation, alignment, or adaptation of other digital and algorithmic literacy initiatives across Europe. They benefit from institutional legitimacy and wide adoption, which supports scalability but risks standardizing a minimal or instrumentalist vision of literacy. Grassroots and research-driven initiatives like CrossOver, and Lire et Écrire offer richer, more critical content, but may face challenges in institutional uptake or policy integration.

### Democratization of Artificial Intelligence

A common objective among the reviewed frameworks is the democratization of artificial intelligence, framed through a citizen-oriented lens. DigComp 2.2, De Nationale AI-Cursus, and Elements of AI aim to make AI more accessible to the general public by using free and user-friendly formats, such as podcasts, quizzes, and videos, as well as practical teaching methods and simplified explanations of technical concepts. Frameworks are also being refined and expanded through consultation processes and feedback gathered via public validation efforts (a.o. AILit framework). Problematically, the meaning of "democratizing" AI is ambiguous: it is not always clear by reading these general-purpose referential (such as De Nationale AI-Cursus) if they aim at either or both:

- democratizing the use of AI by simplifying its mechanism and introducing audiences to its core principles and benefits - hence pushing more users to adopt the technology,
- democratizing the critical knowledge about AI to warn users about the problems AI is generating.

The democratization dimension can be understood as a mechanism to facilitate the societal acceptance of AI by encouraging public engagement and trust. The second is a citizen-oriented approach aligned with the purpose of nurturing algorithmic literacy and transparency. This ambiguity over the use of democratic values (ex: openness, transparency, ethics, etc.) within digital culture has been identified as a way for AI providers to weaponize them in order to pacify dissent over algorithms ([Metcalf et al., 2019](#)) and forcing the pace of technological innovation ([Columbia, 2024](#)). This perspective is further reinforced in the Lire et Écrire framework, *Citoyens dans un monde numérisé : quels savoirs, quelles compétences*, which emphasizes the use of digital tools and the recognition of learners as active agents in their learning processes: "It encourages us to reflect on the emerging models of society and to envision the spaces where we can engage as active agents, not merely as passive users."

### Diverging approaches to algorithmic literacy and transparency across competency frameworks

Frameworks developed by digital inclusion workers or in collaboration with (represented in Café IA, Culture Numérique Occitanie, Lire et Écrire, CrossOver), take as a starting point a concrete situation to be transformed by defining a project grounded in real-life experiences and needs of individuals. Digital tools are seen as means to support specific objectives, rather than ends in themselves, in this context algorithmic literacy contributes

to the autonomy and emancipation of individuals. It is linked to empowerment, citizen agency, and resistance to digital marginalization, calling for tools that help people understand how algorithms affect access to rights, public services, and everyday life. These frameworks pursue a more dialogic and critical transparency, focusing on how people can interpret, question, and even contest algorithmic decisions. Here, transparency serves democratic accountability and collective empowerment, not just institutional legitimacy.

In contrast, remaining analysed frameworks, often supported by self-assessment tools, allow learners to position themselves based solely on skills, without anchoring those skills within the context of a specific project. Institutional approaches (e.g. DigComp 2.2, Pix, AFNOR, De Nationale AI-Cursus) tend to define algorithmic literacy within a digital competence framework, focusing on basic awareness, technical comprehension, and safe digital use. These are often tied to employability and standard education outcomes. for example, frameworks developed in support of the [Digital Education Action Plan](#) ultimately aim to expand the workforce in Europe by increasing the number of qualified ICT specialists into “*reaching a minimum of 80% of the population with basic digital skills and having 20 million ICT specialists by 2030*”. Moreover, Pix and AFNOR focus on functional or procedural skills aligned with labour market needs, with limited emphasis on algorithmic critique or reflection, despite assessing digital competence. Transparency is here conceptualised as a matter of compliance, explainability, and risk minimization; often aimed at professionals, developers, or public administrators. Transparency is seen as a legal or trust-enhancing requirement.

### Mediation and the limits of individual digital skills

Mediation as a learning practice is highlighted by digital inclusion practitioners which considers learning a collective action. The group is conceptualized as a learning community in which each individual plays an active role, and new knowledge emerges through collectively developed actions. The Communication and Collaboration competence area of DigComp is defined primarily as interaction *through* digital technologies, with a strong emphasis on individual skills related to using these tools for communication. This approach places less focus on collaboration as a collective and participatory learning practice.

### Critical standpoints in algorithmic literacy

While most of the reviewed frameworks do contribute to algorithmic literacy & transparency across the four previously outlined dimensions, (“raising awareness that algorithms are involved in a given situation”, “raising interest in getting further information on algorithms”, “supporting the audience in developing a critical standpoint towards algorithms”, “supporting the audience into using algorithms for their own means/objectives”), varying approaches emerge with regard to the third dimension “support the audience in developing a critical standpoint towards algorithms”. When applying the definition of a critical standpoint as outlined in the aforementioned methodology, frameworks developed by, or in collaboration with, digital inclusion workers more comprehensively incorporate the socio-political and ethical dimensions of artificial intelligence in their approach, rather than treating them as peripheral considerations. The CrossOver project, for example, includes a module titled “[The Keyboard Fighters](#)” that focuses on ranking and recommendation algorithms. It seeks to demystify how these algorithms shape media agendas and influence our perception of news and current events. Their approach invites us to consider broadening the scope of our audience to journalists, in a time of increasing algorithmic distortion of public debate (through filter bubbles, platform bias) journalists need tools to understand how narratives are shaped algorithmically.

Frameworks like DigComp 2.2, Pix, AFNOR, Elements of AI, and De Nationale AI-Cursus fall short of the imagine dimension, on critical discussion of who owns digital systems, who profits, and how alternative models of governance (public, cooperative, municipal) might redistribute power. The idea of citizen agency is reduced to the capacity to use tools responsibly, not to question or transform them.

## Environmental considerations in digital competence frameworks

Considerations of the environmental and long-term sustainability of AI are only marginally addressed in most of the examined frameworks as highlighted by similar findings by [Van Audenhove et al., 2024](#) for Digcomp 2.2. “Thematically, DigComp 2.2 primarily focuses on security and privacy, with less attention given to the societal impact of data, such as environmental impact or data fairness.”. This lack of attention towards environmental issues constitutes an area of opportunity for future referential.

## Framing attitudes toward algorithmic literacy

Beside digital skills, frameworks such as AILit, Lire et Écrire promote attitudes aiming to cultivate critical engagement with algorithmic systems. However, they do so from distinct perspectives and with nuanced differences in emphasis. While the AILit framework considers the following attitudes: responsible, curious, innovative, adaptable and empathetic. It emphasizes the importance of being informed and questioning the systems that shape one’s digital environment. Lire et Écrire promotes attitudes grounded in autonomy, reflexivity and critical thinking. The focus is less on understanding algorithms in abstract terms and more on developing a political and social consciousness around digital inequalities, access, and power. This framework fosters a transformative attitude: not just to engage with technology critically, but to challenge its unjust effects and reclaim space for action.

## Legal dimensions in algorithmic literacy

Legal considerations are present in our analysis, ranging from asserting individual rights to addressing non-discrimination upon design and deployment of algorithms (e.g. IT Academie Overheid: E-learning). However, they do not emerge as actionable elements. The only notable occurrence is reflected in the highlights as Knowledge Example 69. *“Knows that all EU citizens have the right to not be subject to fully automated decision-making (e.g. if an automatic system refuses a credit application, the customer has [the right](#) to ask for the decision to be reviewed by a person).”* The document refers to a European Commission [webpage](#) outlining individuals' rights over their personal data under the GDPR and explaining how to exercise them.

Determining which competencies enable individuals to translate these rights into meaningful action is of particular relevance to the objectives of the ALGO-LIT project.

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APPENDIX A\_ Search strategy and key words used, search engines and languages

Search Engines	Search strategy and keywords	Languages
DuckDuckGo, Ecosia, Google.	AI literacy AND training AI literacy AND skills algorithmic literacy Algorithmic AND literacy AND training AI AND literacy AND training AI AND literacy AND course algorithmic AND transparency AND skills	FR/EN/NL